

Software Communications Architecture Specification

APPENDIX C CORE FRAMEWORK IDL

Revision Summary

| | |
|-------|---|
| 1.0 | Initial Release |
| 1.1 | Updated IDL to reflect SCAS changes made for v1.1; updated comments. |
| 2.0 | Incorporate approved Change Proposals, numbers 175, 245, 277, 278, 282, 311, 336, 345. |
| 2.1 | Incorporate approved Change Proposals, numbers 142, 175, 245, 277, 278, 282, 306, 311, 336, 345, 360. |
| 2.2 | Incorporate approved Change Proposals, numbers 138, 496, 509 |
| 2.2.1 | Incorporate approved Change Proposals, numbers 15, 77, 26, 44, 45, 70, 74, 101, 102 |

Change Proposals are controlled by the JTRS Change Control Board. CPs incorporated into the SCA are considered "closed" and can be seen on the JTRS web site at: <https://jtel-sca.spawar.navy.mil/sca/cpstatus.asp>.

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APPENDIX C CORE FRAMEWORK IDL

The CF interfaces are expressed in CORBA IDL. The IDL has been generated directly by the Rational Rose UML software modeling tool. This “forward engineering” approach ensures that the IDL accurately reflects the architecture definition as contained in the UML models. Any IDL compiler for the target language of choice may compile the generated IDL.

The CF interfaces are contained in the CF CORBA module. Additionally, IDL modules are provided for interfaces that extend the *CF::Port* interface by defining basic data sequence types. The StandardEvent CORBA Module contains the standard event types to be passed via the event service.

The IDL modules are also available in electronic form.

C.1 CORE FRAMEWORK IDL.

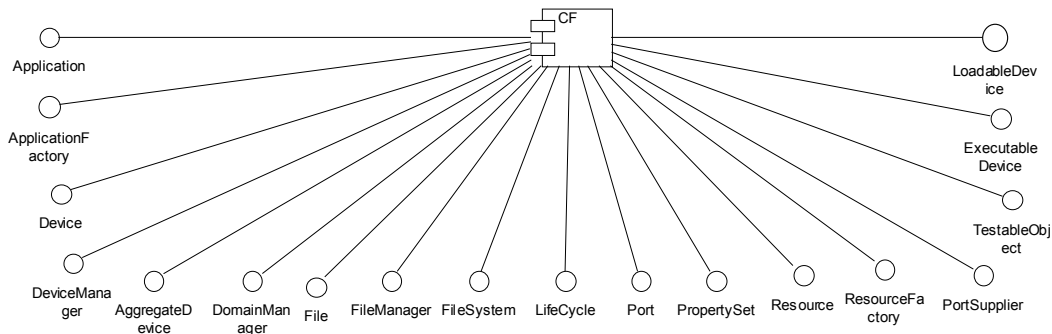


Figure C-2. CF CORBA Module

The following is the CF IDL generated from the Rational Rose model, Rose Enterprise Edition Release Version 2003.06.00.436.000.

```
//Source file: CF.idl

#ifndef __CF_DEFINED
#define __CF_DEFINED

/* This package provides the main framework for all objects within the radio. */

module CF {
```

```
interface LifeCycle;
interface TestableObject;
interface PropertySet;
interface PortSupplier;
interface FileSystem;
interface Device;
interface File;
interface Resource;
interface Application;
interface ApplicationFactory;
interface DeviceManager;
interface FileManager;
interface LoadableDevice;

/* This type is a CORBA IDL struct type which can be used to hold any CORBA
basic type or static IDL type. */

struct DataType {
    /* The id attribute indicates the kind of value and type (e.g., frequency, preset,
    etc.). The id can be an UUID string, an integer string, or a name identifier. */
    string id;

    /* The value attribute can be any static IDL type or CORBA basic type. */
    any value;
};

/* This exception indicates an invalid component profile error. */

exception InvalidProfile {
};

/* The Properties is a CORBA IDL unbounded sequence of CF DataType(s),
which can be used in defining a sequence of name and value pairs. */

typedef sequence <DataType> Properties;

/* This exception indicates an invalid CORBA object reference error. */

exception InvalidObjectReference {
    string msg;
};
```

```
/* This type is a CORBA unbounded sequence of octets. */

typedef sequence <octet> OctetSequence;

/* This type defines a sequence of strings */

typedef sequence <string> StringSequence;

/* This exception indicates a set of properties unknown by the component. */

exception UnknownProperties {
    CF::Properties invalidProperties;
};

/* DeviceAssignmentType defines a structure that associates a component
   with the Device upon which the component is executing on. */

struct DeviceAssignmentType {
    string componentId;
    string assignedDeviceId;
};

/* The IDL sequence, DeviceAssignmentSequence, provides a unbounded
   sequence of 0..n of DeviceAssignmentType. */

typedef sequence <DeviceAssignmentType> DeviceAssignmentSequence;

/* This enum is used to pass error number information in various exceptions. Those
   exceptions starting with "E" map the POSIX definitions, and can be found in IEEE Std
   1003.1 1996 Edition. Those exceptions starting with CF are defined below:
   CF_NOTSET is not defined in the POSIX specification. CF_NOTSET is an SCA specific value
   that is applicable for any exception when the method specific or standard POSIX error
   values are not appropriate.) */

enum ErrorNumberType {

    CF_NOTSET,
    CF_E2BIG,
    CF_EACCES,
    CF_EAGAIN,
    CF_EBADF,
    CF_EBADMSG,
    CF_EBUSY,
```

```
CF_ECANCELED,  
CF_ECHILD,  
CF_EDEADLK,  
CF_EDOM,  
CF_EEXIST,  
CF_EFAULT,  
CF_EFBIG,  
CF_EINPROGRESS,  
CF_EINTR,  
CF_EINVAL,  
CF_EIO,  
CF_EISDIR,  
CF_EMFILE,  
CF_EMLINK,  
CF_MSGSIZE,  
CF_ENAMETOOLONG,  
CF_ENFILE,  
CF_ENODEV,  
CF_ENOENT,  
CF_ENOEXEC,  
CF_ENOLCK,  
CF_ENOMEM,  
CF_ENOSPC,  
CF_ENOSYS,  
CF_ENOTDIR,  
CF_ENOTEMPTY,  
CF_ENOTSUP,  
CF_ENOTTY,  
CF_ENXIO,  
CF_EPERM,  
CF_EPIPE,  
CF_ERANGE,  
CF_EROFS,  
CF_ESPIPE,  
CF_ESRCH,  
CF_ETIMEDOUT,  
CF_EXDEV  
};
```

```
/* The InvalidFileName exception indicates an invalid file name was passed to a file  
service operation. The error number indicates an ErrorNumberType value (e.g.,  
CF_ENAMETOOLONG). The message provides information describing why the filename was  
invalid. */
```

```
exception InvalidFileName {
    /* The error code that corresponds to the error message. */
    CF::ErrorNumberType errorNumber;
    string msg;
};

/* The CF FileException indicates a file-related error occurred. The error number
indicates an ErrorNumberType value (e.g., CF_EBADF, CF_EEXIST, CF_EISDIR, CF_EMFILE,
CF_ENFILE, CF_ENOENT, CF_ENOSPC, CF_ENOTDIR, CF_ENOTEMPTY, CF_EROFS). The message
provides information describing the error. The message can be used for logging the
error. */

exception FileException {
    /* The error code that corresponds to the error message. */
    CF::ErrorNumberType errorNumber;
    string msg;
};

/* This type defines an unbounded sequence of Devices. */

typedef sequence <Device> DeviceSequence;

/* This AggregateDevice interface provides aggregate behavior that can be used
to add and remove Devices from an aggregateDevice. This interface can be
provided via inheritance or as a "provides port" for any Device that is capable of
an aggregate relationship. Aggregated Devices use this interface to add or
remove themselves from composite Devices when being created or torn-down.
from composite Devices when being created or torn-down. */

interface AggregateDevice {

    /* The readonly devices attribute contains a list of devices that have been added to
this Device or a sequence length of zero if the Device has no aggregation
relationships with other Devices. */

    readonly attribute CF::DeviceSequence devices;

    /* The addDevice operation provides the mechanism to associate a Device with another
Device. When a Device changes state or it is being torn down, its associated
Devices
are affected.
```

The addDevice operation adds the input associatedDevice parameter to the AggregateDevice's devices attribute when the associatedDevice does not exist in the devices attribute. The associatedDevice is ignored when duplicated.

The addDevice operation writes a FAILURE_ALARM log record, upon unsuccessful adding of an associatedDevice to the AggregateDevice's devices attribute.

This operation does not return any value.

The addDevice operation raises the CF InvalidObjectReference when the input associated Device is a nil CORBA object reference.

```
*/  
void addDevice (  
    in CF::Device associatedDevice  
)  
    raises (CF::InvalidObjectReference);
```

```
/* The removeDevice operation provides the mechanism to disassociate a Device from  
another Device.
```

The removeDevice operation removes the input associatedDevice parameter from the AggregateDevice's devices attribute.

The removeDevice operation writes a FAILURE_ALARM log record, upon unsuccessful removal of the associatedDevice from the AggregateDevice's devices attribute.

This operation does not return any value.

The removeDevice operation raises the CF InvalidObjectReference when the input associatedDevice is a nil CORBA object reference or does not exist in the aggregate Device's devices attribute.

```
*/  
void removeDevice (  
    in CF::Device associatedDevice  
)  
    raises (CF::InvalidObjectReference);
```

```
};
```

```
/* The Resource interface provides a common API for the control and configuration  
of a software component.
```

The Resource interface inherits from the LifeCycle, PropertySet, TestableObject, and

PortSupplier interfaces.

The inherited Lifecycle, PropertySet, TestableObject, and PortSupplier interface operations are documented in their respective sections of this document.

The Resource interface may also be inherited by other application interfaces as described in the Software Profile's Software Component Descriptor (SCD) file.

```

*/
interface Resource : Lifecycle, TestableObject, PropertySet, PortSupplier {

    /* The StartError exception indicates that an error occurred during an attempt to
       start the Resource. The error number indicates an ErrorNumberType value (e.g.,
       CF_EDOM, CF_EPERM, CF_ERANGE). The message is component-dependent, providing
       additional information describing the reason for the error. */

    exception StartError {
        CF::ErrorNumberType errorNumber;
        string msg;
    };

    /* The StopError exception indicates that an error occurred during an attempt to stop
       the Resource. The error number indicates an ErrorNumberType value (e.g.,
       CF_ECANCELED, CF_EFAULT, CF_EINPROGRESS). The message is component-dependent,
       providing additional information describing the reason for the error. */

    exception StopError {
        CF::ErrorNumberType errorNumber;
        string msg;
    };

    /* The readonly identifier attribute shall contain the unique identifier for a
       resource instance. */

    readonly attribute string identifier;

    /* The start operation puts the Resource in an operating condition.

       The start operation raises the StartError exception if an error occurs while
       starting the resource. */

    void start ()
        raises (CF::Resource::StartError);

    /* The stop operation disables all current operations and put the Resource in a

```

non-operating condition. Subsequent configure, query, and start operations are not inhibited by the stop operation.

The stop operation raises the StopError exception if an error occurs while stopping the resource. */

```
void stop ()
    raises (CF::Resource::StopError);

};

/*
The DeviceManager interface is used to manage a set of logical Devices and
services. The interface for a DeviceManager is based upon its attributes, which are:
```

1. Device Configuration Profile - a mapping of physical device locations to meaningful labels (e.g., audio1, serial1, etc.), along with the Devices and services to be deployed.
2. File System - the FileSystem associated with this DeviceManager.
3. Device Manager Identifier - the instance-unique identifier for this DeviceManager.
4. Device Manager Label - the meaningful name given to this DeviceManager.
5. Registered Devices - a list of Devices that have registered with this DeviceManager.
6. Registered Services - a list of Services that have registered with this DeviceManager.

The DeviceManager upon start up registers itself with a DomainManager. This requirement allows the system to be developed where at a minimum only the DomainManager's component reference needs to be known. A DeviceManager uses the DeviceManager's deviceConfigurationProfile attribute for determining:

1. Services to be deployed for this DeviceManager (for example, log(s)),
2. Devices to be created for this DeviceManager (when the DCD deployondevice element is not specified then the DCD componentinstantiation element is deployed on the same hardware device as the DeviceManager),
3. Devices to be deployed on (executing on) another Device,

4. Devices to be aggregated to another Device,
5. Mount point names for FileSystems,
6. The DCD's id attribute for the DeviceManager's identifier attribute value, and
7. The DCD's name attribute for the DeviceManager's label attribute value.

The DeviceManager creates FileSystem components implementing the FileSystem interface for each OS file system. If multiple FileSystems are to be created, the DeviceManager mounts created FileSystems to a FileManager component (widened to a FileSystem through the FileSys attribute). Each mounted FileSystem name must be unique within the DeviceManager.

The DeviceManager supplies execute operation parameters (IDs and format values) for a Device consisting of:

- a. DeviceManager IOR - The ID is "DEVICE-_MGR_IOR" and the value is a string that is the DeviceManager stringified IOR.
- b. Profile Name - The ID is "PROFILE_NAME" and the value is a CORBA string that is the full mounted file system file path name.
- c. Device Identifier - The ID is "DEVICE_ID" and the value is a string that corresponds to the DCD componentinstantiation id attribute.
- d. Device Label - The ID is "DEVICE_LABEL" and the value is a string that corresponds to the DCD componentinstantiation usage element. This parameter is only used when the DCD componentinstantiation usagaelement is specified.
- e. Composite Device IOR - The ID is "Composite_DEVICE_IOR" and the value is a string that is an AggregateDevice stringified IOR. This parameter is only used when the DCD componentinstantiation element is a composite part of another componentinstantiation element.
- f. The execute ("execparam") properties as specified in the DCD for a componentinstantiation element. The DeviceManager shall pass the componentinstantiation element "execparam" properties that have values as parameters.

The DeviceManager passes "execparam" parameters' IDs and values as string values. The DeviceManager uses the componentinstantiation element's SPD implementation code's stacksize and priority elements, when specified, for the execute options parameters.

The DeviceManager initializes and configures logical Devices that are started by the DeviceManager after they have registered with the DeviceManager. The DeviceManager configures a DCD's componentinstantiation element provided the componentinstantiation element has "configure" readwrite or writeonly properties with values.

If a Service is deployed by the DeviceManager, the DeviceManager supplies execute operation parameters (IDs and format values) consisting of:

- a. DeviceManager IOR - The ID is "DEVICE_MGR_IOR" and the value is a string that is the DeviceManager stringified IOR.
- b. Service Name - The ID is "SERVICE_NAME" and the value is a string that corresponds to the DCD componentinstantiation usagename element. */

```
interface DeviceManager : PropertySet, PortSupplier {
    /* This structure provides the object reference and name of services that have
       registered with the DeviceManager. */

    struct ServiceType {
        Object serviceObject;
        string serviceName;
    };

    /* This type provides an unbounded sequence of ServiceType structures for services
       that have registered with the DeviceManager. */

    typedef sequence <ServiceType> ServiceSequence;

    /* The readonly deviceConfigurationProfile attribute contains the DeviceManager's
       profile. The readonly deviceConfigurationProfile attribute contains either a
       profile element with a file reference to the DeviceManager's Device Configuration
       Descriptor (DCD) profile or the XML for the DeviceManager's DCD profile. Files
       referenced within the profile are obtained from a FileSystem.
    */
    readonly attribute string deviceConfigurationProfile;

    /* The readonly fileSys attribute contains the FileSystem associated with this
       DeviceManager or a nil CORBA object reference if no FileSystem is associated with
       this DeviceManager.
    */
    readonly attribute CF::FileSystem fileSys;
```

```
/* The readonly identifier attribute shall contain the instance-unique identifier for
   a DeviceManager. The identifier is identical to the deviceconfiguration element id
   attribute of the DeviceManager's Device Configuration Descriptor (DCD) file.
*/
readonly attribute string identifier;

/* The readonly label attribute contains the DeviceManager's label. The label
   attribute is the meaningful name given to a DeviceManager.
*/
readonly attribute string label;

/* The readonly registeredDevices attribute contains a list of Devices that have
   registered with this DeviceManager or a sequence length of zero if no Devices have
   registered with the DeviceManager.
*/
readonly attribute CF::DeviceSequence registeredDevices;

/* The readonly registeredServices attribute shall contain a list of Services that
   have registered with this DeviceManager or a sequence length of zero if no Services
   have registered with the DeviceManager.
*/
readonly attribute CF::DeviceManager::ServiceSequence registeredServices;

/* This operation provides the mechanism to register a Device with a DeviceManager.
```

The registerDevice operation adds the input registeringDevice to the DeviceManager's registeredDevices attribute when the input registeringDevice does not already exist in the registeredDevices attribute. The registeringDevice is ignored when duplicated.

The registerDevice operation registers the registeringDevice with the DomainManager when the DeviceManager has already registered to the DomainManager and the registeringDevice has been successfully added to the DeviceManager's registeredDevices attribute.

The registerDevice operation writes a log record with the log level set to FAILURE_ALARM, upon unsuccessful registration of a Device to the DeviceManager's registeredDevices.

This operation does not return any value.

The registerDevice operation raises the CF InvalidObjectReference when the input

```
    registeredDevice is a nil CORBA object reference.
*/
void registerDevice (
    in CF::Device registeringDevice
)
    raises (CF::InvalidObjectReference);

/* This operation unregisters a Device from a DeviceManager.

The unregisterDevice operation removes the input registeredDevice from the
DeviceManager's registeredDevices attribute. The unregisterDevice operation
unregisters the input registeredDevice from the DomainManager when the input
registeredDevice is registered with the DeviceManager and the DeviceManager is not
shutting down.

The unregisterDevice operation writes a log record with the log level set to
FAILURE_ALARM, when it cannot successfully remove a registeredDevice from the
DeviceManager's registeredDevices.

This operation does not return any value.

The unregisterDevice operation raises the CF InvalidObjectReference when the input
registeredDevice is a nil CORBA object reference or does not exist in the
DeviceManager's registeredDevices attribute.
*/
void unregisterDevice (
    in CF::Device registeredDevice
)
    raises (CF::InvalidObjectReference);

/* This operation provides the mechanism to terminate a DeviceManager.

The shutdown operation unregisters the DeviceManager from the DomainManager.

The shutdown operation performs releaseObject on all of the DeviceManager's
registered Devices (DeviceManager's registeredDevices attribute).

The shutdown operation causes the DeviceManager to be unavailable (i.e. released
from the CORBA environment and its process terminated on the OS), when all of the
DeviceManager's registered Devices are unregistered from the DeviceManager.

This operation does not return any value.
```

```
    This operation does not raise any exceptions.
*/
void shutdown ();

/* This operation provides the mechanism to register a Service with a DeviceManager.

    The registerService operation adds the input registeringService to the
    DeviceManager's registeredServices attribute when the input registeringService
    does not already exist in the registeredServices attribute. The registeringService
    is ignored when duplicated.

    The registerService operation registers the registeringService with the
    DomainManager when the DeviceManager has already registered to the DomainManager
    and the registeringService has been successfully added to the DeviceManager's
    registeredServices attribute.

    The registerService operation writes a log record with the log level set to
    FAILURE_ALARM, upon unsuccessful registration of a Service to the DeviceManager's
    registeredServices.

    This operation does not return any value.

    The registerService operation raises the CF InvalidObjectReference exception when
    the input registeredService is a nil CORBA object reference.
*/
void registerService (
    in Object registeringService,
    in string name
)
    raises (CF::InvalidObjectReference);

/* This operation unregisters a Service from a DeviceManager.

    The unregisterService operation removes the input unregisteringService from the
    DeviceManager's registeredServices attribute. The unregisterService operation
    unregisters the input unregisteringService from the DomainManager when the input
    unregisteringService is registered with the DeviceManager and the DeviceManager
    is not in the shutting down state.

    The unregisterService operation writes a log record with the log level set to
    FAILURE_ALARM, when it cannot successfully remove an unregisteringService from the
    DeviceManager's registeredServices.
```

This operation does not return any value.

The unregisterService operation raises the CF InvalidObjectReference when the input unregisteringService is a nil CORBA object reference or does not exist in the DeviceManager's registeredServices attribute. */

```
void unregisterService (
    in Object unregisteringService,
    in string name
)
    raises (CF::InvalidObjectReference);
```

/* This operation returns the SPD implementation ID that the DeviceManager interface used to create a component.

The GetComponentImplementationId operation will return the SPD implementation element's ID attribute that matches the ID attribute of the SPD implementation element used to create the component specified by the input componentInstantiation ID parameter.

The GetComponentImplementationId operation returns the SPD implementation element's ID attribute that matches the SPD implementation element used to create the component identified by the input componentInstantiationID parameter. The GetComponentImplementationId operation returns an empty string when the input componentInstantiationID parameter does not match the ID attribute of any SPD implementation element used to create the component.

This operation does not raise any exceptions.

```
*/
string GetComponentImplementationId (
    in string componentInstantiationId
);
```

```
};
```

/* The FileSystem interface defines the CORBA operations to enable remote access to a physical file system.

*/

```
interface FileSystem {
```

/* This exception indicates a set of properties unknown by the FileSystem object.

*/

```
exception UnknownFileSystemProperties {
```



```

        CF::Properties invalidProperties;
    };

    /* This constant indicates file system size.
    */
    const string SIZE = "SIZE";

    /* This constant indicates the available space on the file system.
    */
    const string AVAILABLE_SIZE = "AVAILABLE_SIZE";

    /* The FileType indicates the type of file entry. A file system can have PLAIN or
       DIRECTORY files and mounted file systems contained in a FileSystem.
    */
    enum FileType {

        PLAIN,
        DIRECTORY,
        FILE_SYSTEM
    };

    /* The FileInformationType indicates the information returned for a file. Not all the
       fields in the FileInformationType are applicable for all file systems. At a
       minimum, the FileSystem shall support name, kind, and size information for a file.
       Examples of other file properties that can be specified are created time, modified
       time, and last access time.

       name: This field indicates the simple name of the file.
       kind: This field indicates the type of the file entry.
       size: This field indicates the size in octets.
    */
    struct FileInformationType {
        string name;
        CF::FileSystem::FileType kind;
        unsigned long long size;
        CF::Properties fileProperties;
    };

    typedef sequence <FileInformationType> FileInformationSequence;

    /* The CREATED_TIME_ID is the identifier for the created time file property. A created
       time property indicates the time the file was created. The value for created time
       shall be long long and measured in seconds since 00:00:00 UTC, Jan. 1, 1970. */

```

```
const string CREATED_TIME_ID = "CREATED_TIME";

/* The MODIFIED_TIME_ID is the identifier for the modified time file property. The
   modified time property is the time the file data was last modified. The value for
   modified time property shall be long long and measured in seconds since 00:00:00
   UTC, Jan. 1, 1970. */
const string MODIFIED_TIME_ID = "MODIFIED_TIME";

/* The LAST_ACCESS_TIME_ID is the identifier for the last access time file property.
   The last access time property is the time the file was last access (e.g. read). The
   value for last access time property shall be long long and measured in seconds
   since 00:00:00 UTC, Jan. 1, 1970. */
const string LAST_ACCESS_TIME_ID = "LAST_ACCESS_TIME";

/* The remove operation removes the file with the given filename. This operation
   ensures that the filename is an absolute pathname of the file relative to the
   target FileSystem. If an error occurs, this operation raises the appropriate
   exception:

   CF InvalidFilename - The filename is not valid.
   CF FileException - A file-related error occurred during the operation. */

void remove (
    in string fileName
)
    raises (CF::FileException,CF::InvalidFileName);

/* The copy operation copies the source file with the specified sourceFileName to the
   destination file with the specified destinationFileName. This operation ensures
   that the sourceFileName and destinationFileName are absolute pathnames relative to
   the target FileSystem. If an error occurs, this operation raises the appropriate
   exception:

   CF InvalidFilename - The filename is not valid.
   CF FileException - A file-related error occurred during the operation.
*/
void copy (
    in string sourceFileName,
    in string destinationFileName
)
    raises (CF::InvalidFileName,CF::FileException);

/* The exists operation checks to see if a file exists based on the filename
```

parameter. This operation ensures that the filename is a full pathname of the file relative to the target FileSystem and raise an CF InvalidFileName exception if the name is invalid.

This operation shall return True if the file exists, otherwise False shall be returned.

*/

```
boolean exists (
    in string fileName
)
raises (CF::InvalidFileName);
```

/* The list operation provides the ability to obtain a list of files along with their information in the FileSystem according to a given search pattern. The list operation can be used to return information for one file or for a set of files.

The list operation returns a list of file information based upon the search pattern given. The list operation supports the following wildcard characters for base file names (i.e., the part after the right-most slash):

(1) * used to match any sequence of characters (including null).

(2) ? used to match any single character.

These wildcards may only be applied to the base filename in the search pattern given. For example, the following are valid search patterns:

| | |
|-----------------|---|
| /tmp/files/*.* | Returns all files and directories within the /tmp/files directory. Directory names indicated with a "/" at the end of the name. |
| /tmp/files/foo* | Returns all files beginning with the letters "foo" in the /tmp/files directory. |
| /tmp/files/f?? | Returns all 3 letter files beginning with the letter f in the /tmp/files directory. |

The list operation returns a FileInformationSequence for files that match the wildcard specification as specified in the input pattern parameter. The list operation will return a zero length sequence when no file matching occurred for the input pattern parameter.

The list operation raises the InvalidFileName exception when the input pattern

does not start with a slash "/" or cannot be interpreted due to unexpected characters.

The list operation raises the FileException when a file-related error occurs. */

```
CF::FileSystem::FileInformationSequence list (  
    in string pattern  
)  
    raises (CF::FileException,CF::InvalidFileName);
```

/* The create operation creates a new File based upon the provided file name and returns a File to the opened file. A null file is returned and a related exception shall be raised if an error occurs.

CF InvalidFilename - The filename is not valid.

CF FileException - File already exists or another file error occurred. */

```
CF::File create (  
    in string fileName  
)  
    raises (CF::InvalidFileName,CF::FileException);
```

/* The open operation opens a file based upon the input fileName. The read_Only parameter indicates if the file should be opened for read access only. When read_Only is false the file is opened for write access.

The open operation returns a File component parameter on successful completion.

The open operation returns a null file component reference if the open operation is unsuccessful. If the file is opened with the read_Only flag set to true, then writes to the file will be considered an error.

The open operation raises the CF FileException if the file does not exist or another file error occurred.

The open operation raises the CF InvalidFilename exception when the filename is not a valid file name or not an absolute pathname. */

```
CF::File open (  
    in string fileName,  
    in boolean read_Only  
)  
    raises (CF::InvalidFileName,CF::FileException);
```

```
/* The mkdir operation create a FileSystem directory based on the directoryName given.  
This operation creates all parent directories required to create the directory path  
given. If an error occurs, this operation raises the appropriate exception.
```

```
Exceptions/Errors
```

```
CF InvalidFilename - The directory name is not valid.
```

```
CF FileException - A file-related error occurred during the operation. */
```

```
void mkdir (  
    in string directoryName  
)  
    raises (CF::InvalidFileName,CF::FileException);
```

```
/* The rmdir operation removes a FileSystem directory based on the directoryName  
given. If an error occurs, this operation raises the appropriate exception.
```

```
Exceptions/Errors
```

```
CF InvalidFilename - The directory name is not valid.
```

```
CF FileException - Directory does not exist or another file-related error occurred.
```

```
*/
```

```
void rmdir (  
    in string directoryName  
)  
    raises (CF::InvalidFileName,CF::FileException);
```

```
/* The query operation returns file system information to the calling client based  
upon the given fileSystemProperties' ID.
```

```
As a minimum, the FileSystem query operation supports the following  
fileSystemProperties:
```

1. SIZE - an ID value of "SIZE causes query to return an unsigned long long containing the file system size (in octets).
2. AVAILABLE SPACE - an ID value of "AVAILABLE SPACE" causes the query operation to return an unsigned long long containing the available space on the file system (in octets).

```
The query operation raises the UnknownFileSystemProperties exception when the given  
file system property is not recognized.
```

```
*/
```

```

void query (
    inout CF::Properties fileSystemProperties
)
    raises (CF::FileSystem::UnknownFileSystemProperties);

};

/* The File interface provides the ability to read and write files residing within a CF
compliant distributed FileSystem. A file can be thought of conceptually as a sequence
of octets with a current filepointer describing where the next read or write will
occur.

This filepointer points to the beginning of the file upon construction of the file
object. The File interface is modeled after the POSIX/C file interface.
*/
interface File {

    /* The IOException exception indicates an error occurred during a read or write
operation to a File. The error number indicates an ErrorNumberType value (e.g.,
CF_EFBIG, CF_ENOSPC, CF_EROFS). The message is component-dependent, providing
additional information describing the reason for the error.
*/
    exception IOException {

        /* The error code that corresponds to the error message. */
        CF::ErrorNumberType errorNumber;
        string msg;
    };

    /* This exception indicates the file pointer is out of range based upon the current
file size. */
    exception InvalidFilePointer {
    };

    /* The readonly fileName attribute contains the file name given to the FileSystem
open/create operation. The syntax for a filename is based upon the UNIX operating
system. That is, a sequence of directory names separated by forward slashes (/)
followed by the base filename. The fileName attribute will contain the filename
given to the FileSystem::open operation.
*/
    readonly attribute string fileName;

    /* The readonly filePointer attribute contains the file position where the next read

```

```
    or write will occur.
*/
readonly attribute unsigned long filePointer;

/* Applications require the read operation in order to retrieve data from remote
files.

The read operation reads, from the referenced file, the number of octets specified
by the input length parameter and advance the value of the filePointer attribute
by the number of octets actually read. The read operation reads less than the
number of octets specified in the input-length parameter, when an end of file is
encountered.

The read operation returns via the out Message parameter an CF OctetSequence that
equals the number of octets actually read from the File. If the filePointer
attribute value reflects the end of the File, the read operation returns a
0-length CF OctetSequence.

The read operation raises the IOException when a read error occurs.
*/
void read (
    out CF::OctetSequence data,
    in unsigned long length
)
    raises (CF::File::IOException);

/* The write operation writes data to the file referenced. If the write is successful,
the write operation shall increment the filePointer attribute to reflect the
number of octets written. If the write is unsuccessful, the filePointer attribute
value is maintained or is restored to its value prior to the write operation call.

This operation does not return any value.

The write operation raises the IOException when a write error occurs.
*/
void write (
    in CF::OctetSequence data
)
    raises (CF::File::IOException);

/* The sizeOf operation returns the current size of the file.
```

The CF FileException is raised when a file-related error occurs (e.g. the file

```
        does not exist anymore).
    */
    unsigned long sizeof ()
        raises (CF::FileException);

    /* The close operation releases any OE file resources associated with the component.
       The close operation makes the file unavailable to the component

       A client should release its CORBA File reference after closing the File. The close
       operation raises CF FileException exception when it cannot successfully close the
       file.
    */
    void close ()
        raises (CF::FileException);

    /* The setFilePointer operation positions the file pointer where the next read or
       write will occur.

       The setFilePointer operation sets the filePointer attribute value to the input
       filePointer.

       This operation does not return any value.

       The setFilePointer operation raises the CF FileException when the file pointer for
       the referenced file cannot be set to the value of the input filePointer parameter.

       The setFilePointer operation raises the InvalidFilePointer exception when the
       value of the filePointer parameter exceeds the file size.
    */
    void setFilePointer (
        in unsigned long filePointer
    )
        raises (CF::File::InvalidFilePointer,CF::FileException);

};

/* A ResourceFactory is used to create and tear down a Resource. The ResourceFactory
   interface is designed after the Factory Design Patterns. Each ResourceFactory object
   creates a specific type of Resource within the radio. The ResourceFactory interface
   provides a one-step solution for creating a Resource, reducing the overhead of starting
   up Resources. In CORBA, there are two separate object reference counts. One for the
   client side and one for the server side. The Factory keeps a server-side reference
   count of the number of clients that have requested the resource. When a client is done
   with a resource, the client releases the client resource reference and calls
```


releaseResource to the ResourceFactory. When the server-side reference goes to zero, the server resource object is released from the ORB that causes the resource to be destroyed.

*/

interface ResourceFactory {

/* This exception indicates the resource ID does not exist in the ResourceFactory.

*/

exception InvalidResourceId {

};

/* This exception indicates that the shutdown method failed to release the ResourceFactory from the CORBA environment due to the fact the Factory still contains Resources. The message is component-dependent, providing additional information describing why the shutdown failed.

*/

exception ShutdownFailure {

/* This message indicates the reason for the shutdown failure. */

string msg;

};

/* The CreateResourceFailure exception indicates that the createResource method failed to create the Resource. The error number indicates an ErrorNumberType value (e.g., CF_NOTSET, CF_EBADMSG, CF_EINVAL, CF_EMSGSIZE, CF_ENOMEM). The message is component-dependent, providing additional information describing the reason for the error.

*/

exception CreateResourceFailure {

CF::ErrorNumberType errorNumber;

string msg;

};

/* The readonly identifier attribute contains the unique identifier for a resource factory instance.

*/

readonly attribute string identifier;

/* The createResource operation provides the capability to create Resources in the same process space as the ResourceFactory or to return a Resource that has already been created. This behavior is an alternative approach to the Device's execute operation for creating a Resource.

The resourceId is the identifier for Resource. The qualifiers are parameter values

used by the ResourceFactory in creation of the Resource. The ApplicationFactory can determine the values to be supplied for the qualifiers from the description in the ResourceFactory's Software Profile. The qualifiers may be used to identify, for example, specific subtypes of Resources created by a ResourceFactory.

If no Resource exists for the given resourceId, the createResource operation creates a Resource. If the Resource already exists, the Resource's reference is returned. The createResource operation assigns the given resourceId to a new Resource and either set a reference count to one, when the Resource is initially created, or increment the reference count by one, when the Resource already exists. The reference count is used to indicate the number of times that a specific Resource reference has been given to requesting clients. This ensures that the ResourceFactory does not release a Resource that has a reference count greater than 0. When multiple clients have obtained a reference to the same Resource, each client will request release of the Resource when through with the Resource. However, the Resource must not be released until the release request comes from the last client in existence.

The createResource operation returns a reference to the created Resource or the existing Resource. The createResource operation returns a nil CORBA component reference when the operation is unable to create the Resource.

The createResource operation raises the CreateResourceFailure exception when it cannot create the Resource.

*/

```
CF::Resource createResource (  
    in string resourceId,  
    in CF::Properties qualifiers  
)  
    raises (CF::ResourceFactory::CreateResourceFailure);
```

/* In CORBA there is client side and server side representation of a Resource. This operation provides the mechanism of releasing the Resource in the CORBA environment on the server side when all clients are through with a specific Resource. The client still has to release its client side reference of the Resource.

The releaseResource operation decrements the reference count for the specified resource, as indicated by the resourceId. The releaseResource operation makes the Resource no longer available (i.e., it is released from the CORBA environment) when the Resource's reference count is zero.

This operation does not return a value.

```

    The releaseResource operation raises the InvalidResourceId exception if an invalid
    resourceId is received.
*/
void releaseResource (
    in string resourceId
)
    raises (CF::ResourceFactory::InvalidResourceId);

/* In CORBA there is client side and server side representation of a ResourceFactory.
   This operation provides the mechanism for releasing the ResourceFactory from the
   CORBA environment on the server side. The client has the responsibility to release
   its client side reference of the ResourceFactory.

   The shutdown operation results in the ResourceFactory being unavailable to any
   subsequent calls to its object reference (i.e. it is released from the CORBA
   environment).

   The shutdown operation raises the ShutdownFailure exception for any error that
   prevents the shutdown of the ResourceFactory.
*/
void shutdown ()
    raises (CF::ResourceFactory::ShutdownFailure);

};

/* Multiple, distributed FileSystems may be accessed through a FileManager. The FileManager
   interface appears to be a single FileSystem although the actual file storage may span
   multiple physical file systems. This is called a federated file system. A federated
   file system is created using the mount and unmount operations. Typically, the Domain
   Manager or system initialization software will invoke these operations.

   The FileManager inherits the IDL interface of a FileSystem. Based upon the pathname of
   a directory or file and the set of mounted filesystems, the FileManager will delegate
   the FileSystem operations to the appropriate FileSystem. For example, if a FileSystem
   is mounted at /ppc2, an open operation for a file called /ppc2/profile.xml would be
   delegated to the mounted FileSystem. The mounted FileSystem will be given the filename
   relative to it. In this example the FileSystem's open operation would receive /profile.
   xml as the fileName argument.

   Another example of this concept can be shown using the copy operation. When a client
   invokes the copy operation, the FileManager will delegate operations to the appropriate
   FileSystems (based upon supplied pathnames) thereby allowing copy of files between
   filesystems.

```

If a client does not need to mount and unmount FileSystems, it can treat the FileManager as a FileSystem by CORBA widening a FileManager reference to a FileSystem reference. One can always widen a FileManager to a FileSystem since the FileManager is derived from a FileSystem.

The FileManager's inherited FileSystem operations behavior implements the FileSystem operations against the mounted file systems. The FileSystem operations ensure that the filename/directory arguments given are absolute pathnames relative to a mounted FileSystem. The FileManager's FileSystem operations removes the FileSystem mounted name from the input fileName before passing the fileName to an operation on a mounted FileSystem.

The FileManager uses the mounted FileSystem for FileSystem operations based upon the mounted FileSystem name that exactly matches the input fileName to the lowest matching subdirectory.

The query operation returns the combined mounted file systems information to the calling client based upon the given input fileSystemProperties' IDs. As a minimum, the query operation supports the following input fileSystemProperties IDs:

1. SIZE - a property item ID value of "SIZE" will cause the query operation to return the combined total size of all the mounted file system as an unsigned long long property value.
2. AVAILABLE_SPACE - a property item ID value of "AVAILABLE_SPACE" will cause the query operation to return the combined total available space (in octets) of all the mounted file system as unsigned long long property value.

The query operation raises the UnknownFileSystemProperties exception when the input fileSystemProperties parameter contains an invalid property ID.

```

*/
interface FileManager : FileSystem {
    /* The Mount structure identifies a FileSystem mounted within a FileManager. */

    struct MountType {
        string mountPoint;
        CF::FileSystem fs;
    };

    /* This type defines an unbounded sequence of mounted FileSystems. */
    typedef sequence <MountType> MountSequence;

    /* This exception indicates a mount point does not exist within the FileManager */

```

```

exception NonExistentMount {
};

/* This exception indicates the FileSystem is a null (nil) object reference. */
exception InvalidFileSystem {
};

/* This exception indicates the mount point is already in use in the file manager. */
exception MountPointAlreadyExists {
};

/* The FileManager supports the notion of a federated file system. To create a
   federated file system, the mount operation associated a FileSystem with a mount
   point (a directory name).

   The mount operation associates the specified FileSystem with the given mountPoint.
   A mountPoint name begins with a "/". A mountPoint name is a logical directory name
   for a FileSystem.

   The mount operation raises the NonExistentMount exception when the mountPoint
   (directory) name is not an absolute pathname relative to the mounted file.

   The mount operation raises the MountPointAlreadyExists exception when the
   mountPoint already exists in the file manager.

   The InvalidFileSystem exception is raised when the input FileSystem is a null
   object reference.
*/
void mount (
    in string mountPoint,
    in CF::FileSystem file_System
)
    raises
(CF::InvalidFileName,CF::FileManager::InvalidFileSystem,CF::FileManager::MountPointAlreadyExists);

/* The unmount operation removes a mounted FileSystem from the FileManager whose
   mounted name matches the input mountPoint name. The unmount operation raises
   NonExistentMount when the mount point does not exist within the FileManager.
*/
void unmount (
    in string mountPoint
)
    raises (CF::FileManager::NonExistentMount);

```

```

/* The getMounts operation returns the FileManager's mounted FileSystems.
*/
CF::FileManager::MountSequence getMounts ();

};

/* This interface provides operations for managing associations between ports. An
application defines a specific Port type by specifying an interface that inherits the
Port interface. An application establishes the operations for transferring data and
control. The application also establishes the meaning of the data and control values.
Examples of how applications may use ports in different ways include: push or pull,
synchronous or asynchronous, mono- or bi-directional, or whether to use flow control
(e.g., pause, start, stop).

The nature of Port fan-in, fan-out, or one-to-one is component dependent.

Note 1: The CORBA specification defines only a minimum size for each basic IDL type.
The actual size of the data type is dependent on the language (defined in the
language mappings) as well as the Central Processing Unit (CPU) architecture
used. By using these CORBA basic data types, portability is maintained between
components implemented in differing CPU architectures and languages.

Note 2: How components' ports are connected is described in the software assembly
descriptor file of the Domain Profile.
*/
interface Port {

    /* This exception indicates one of the following errors has occurred in the
    specification of a Port association:

        - errorCode 1 means the Port component is invalid (unable to narrow object
        reference) or illegal object reference,
        - errorCode 2 means the Port name is not found (not used by this Port).
    */
    exception InvalidPort {
        unsigned short errorCode;
        string msg;
    };

    /* This exception indicates the Port is unable to accept any additional connections.
    */
    exception OccupiedPort {

```

```

};

/* The connectPort operation makes a connection to the component identified by the
   input parameters. The connectPort operation establishes only half of the
   association.

   A port may support several connections. The input connectionId is a unique
   identifier to be used by disconnectPort when breaking this specific connection.

   The connectPort operation raises the InvalidPort exception when the input connection
   parameter is an invalid connection for this Port.

   The OccupiedPort exception is raised when the Port is fully occupied and unable to
   accept connections.
*/
void connectPort (
    in Object connection,
    in string connectionId
)
    raises (CF::Port::InvalidPort,CF::Port::OccupiedPort);

/* The disconnectPort operation breaks the connection to the component identified by
   the input parameters.

   The InvalidPort exception is raised when the name passed to the operation is
   invalid.
*/
void disconnectPort (
    in string connectionId
)
    raises (CF::Port::InvalidPort);

};

/* The LifeCycle interface defines the generic operations for initializing or releasing an
   instantiated component specific data and/or processing elements. */

interface LifeCycle {

    /* This exception indicates an error occurred during component initialization. The
       messages provides additional information describing the reason why the error
       occurred.
    */
    exception InitializeError {

```

```
        CF::StringSequence errorMessages;
    };

    /* This exception indicates an error occurred during component releaseObject. The
       messages provides additional information describing the reason why the errors
       occurred.
    */
    exception ReleaseError {
        CF::StringSequence errorMessages;
    };

    /* The purpose of the initialize operation is to provide a mechanism to set an object
       to an known initial state. (For example, data structures may be set to initial
       values, memory may be allocated, hardware devices may be configured to some state,
       etc.).

       Initialization behavior is implementation dependent.

       This operation raises the InitializeError when an initialization error occurs.
    */
    void initialize ()
        raises (CF::LifeCycle::InitializeError);

    /* The purpose of the releaseObject operation is to provide a means by which an
       instantiated component may be torn down. The releaseObject operation releases
       itself from the CORBA ORB.

       The releaseObject operation releases all internal memory allocated by the component
       during the life of the component. The releaseObject operation tears down the
       component (i.e. released from the CORBA environment). The releaseObject operation
       releases components from the Operating Environment.

       This operation raises a ReleaseError when a release error occurs.
    */
    void releaseObject ()
        raises (CF::LifeCycle::ReleaseError);
};

/* A Device is a type of Resource within the domain and has the requirements as stated in
   the Resource interface. This interface defines additional capabilities and attributes
   for any logical Device in the domain. A logical Device is a functional abstraction for
   a set (e.g., zero or more) of hardware devices and provides the following attributes and
```


operations:

1. Software Profile Attribute - This SPD XML profile defines the logical Device capabilities (data/command uses and provides ports, configure and query properties, capacity properties, status properties, etc.), which could be a subset of the hardware device's capabilities.
2. State Management Attributes - The usage, operational, and administrative states constitutes the overall state for a logical Device. Status properties may contain more detailed information about aspects of the states.
3. Capacity Operations - In order to use a device, certain capacities (e.g., memory, performance, etc.) must be obtained from the Device. The capacity properties will vary among devices and are described in the Software Profile. A device may have multiple allocatable capacities, each having its own unique capacity model.

The following behavior is in addition to the LifeCycle releaseObject operation behavior. The releaseObject operation calls the releaseObject operation on all of the Device's aggregated Devices (i.e., those Devices that are contained within the AggregateDevice's devices attribute).

The releaseObject operation transitions the Device's adminState to SHUTTING_DOWN state, when the Device's adminState is UNLOCKED.

The releaseObject operation causes the Device to be unavailable (i.e., released from the CORBA environment, and its logical Device's process terminated on the OS when applicable), when the Device's adminState transitions to LOCKED, meaning its aggregated Devices have been removed and the Device's usageState is IDLE.

The releaseObject operation causes the removal of its Device from the Device's compositeDevice.

The releaseObject operation unregisters its Device from its DeviceManager. The releaseObject operation does not return a value.

The releaseObject operation shall raise the ReleaseError exception when the releaseObject operation is not successful in releasing a logical Device due to internal processing errors that occurred within the Device being released. */

```
interface Device : Resource {  
    /* This exception indicates that the device is not capable of the behavior being  
       attempted due to the state the Device is in. An example of such behavior is
```

```
allocateCapacity.

    exception InvalidState {string msg;};
*/
exception InvalidState {
    string msg;
};

/* The InvalidCapacity exception returns the capacities that are not valid for this
device.
*/
exception InvalidCapacity {

    /* The message indicates the reason for the invalid capacity. */
    string msg;

    /* The invalid capacities sent to the allocateCapacity operation. */
    CF::Properties capacities;
};

/* This is a CORBA IDL enumeration type that defines a Device's administrative states.
The administrative state indicates the permission to use or prohibition against
using the Device.
*/
enum AdminType {

    LOCKED,
    SHUTTING_DOWN,
    UNLOCKED
};

/* This is a CORBA IDL enumeration type that defines a Device's operational states.
The operational state indicates whether or not the object is functioning.
*/
enum OperationalType {

    ENABLED,
    DISABLED
};

/* This is a CORBA IDL enumeration type that defines the Device's usage states. The
usage state indicates which of the following states a Device is in:
```

```
IDLE    -    not in use
ACTIVE  -    in use, with capacity remaining for allocation or
BUSY    -    in use, with no capacity remaining for allocation
*/
enum UsageType {

    IDLE,
    ACTIVE,
    BUSY

};

/* The readonly usageState attribute contains the Device's usage state (IDLE, ACTIVE,
or BUSY). UsageState indicates whether or not a device is actively in use at a
specific instant, and if so, whether or not it has spare capacity for allocation
at that instant.

Whenever the usageState attribute changes, the Device sends an event to the Incoming
Domain Management event channel with event data consisting of a
StateChangeEventType. The event data will be populated as follows:

1. The producerId field is the identifier attribute of the Device.

2. The sourceId field is the identifier attribute of the Device.

3. The stateChangeCategory field is  USAGE_STATE_EVENT.

4. The stateChangeFrom and stateChangeTo fields reflects the usageState attribute
value before and after the state change, respectively.
*/
readonly attribute CF::Device::UsageType usageState;

/* The administrative state indicates the permission to use or prohibition against
using the device. The adminState attribute contains the device's admin state value.
The adminState attribute only allows the setting of LOCKED and UNLOCKED values,
where setting "LOCKED" is only effective when the adminState attribute value is
UNLOCKED, and setting "UNLOCKED" is only effective when the adminState attribute
value is LOCKED or SHUTTING_DOWN. Illegal state transitions commands are ignored.
The adminState attribute, upon being commanded to be LOCKED, transitions from the
UNLOCKED to the SHUTTING_DOWN state and set the adminState to LOCKED for its
entire aggregation of Devices (if it has any). The adminState then transitions
to the LOCKED state when the Device's usageState is IDLE and its entire aggregation
of Devices are LOCKED.
```

Whenever the adminState attribute changes, the Device shall sends an event to the Incoming Domain Management event channel with event data consisting of a StateChangeEventType. The event data will be populated as follows:

1. The producerId field is the identifier attribute of the Device.
2. The sourceId field is the identifier attribute of the Device.
3. The stateChangeCategory field is ADMINISTRATIVE_STATE_EVENT.
4. The stateChangeFrom and stateChangeTo fields reflects the adminState attribute value before and after the state change, respectively.

*/

attribute CF::Device::AdminType adminState;

/* The readonly operationalState attribute contains the device's operational state (ENABLED or DISABLED). The operational state indicates whether or not the device is functioning.

Whenever the operationalState attribute changes, the Device sends an event to the Incoming Domain Management event channel with event data consisting of a StateChangeEventType. The event data will be populated as follows:

1. The producerId field is the identifier attribute of the Device.
2. The sourceId field is the identifier attribute of the Device.
3. The stateChangeCategory field is OPERATIONAL_STATE_EVENT.
4. The stateChangeFrom and stateChangeTo fields reflects the operationalState attribute value before and after the state change, respectively.

*/

readonly attribute CF::Device::OperationalType operationalState;

/* The softwareProfile attribute is the XML description for this logical Device. The readonly softwareProfile attribute contains either a profile DTD element with a file reference to the SPD profile file or the XML for the SPD profile. Files referenced within the softwareProfile are obtained via the FileManager.

*/

readonly attribute string softwareProfile;

/* The readonly label attribute contains the Device's label. The label attribute is the meaningful name given to a Device. The attribute could convey location

```
information within the system (e.g., audiol, seriall, etc.).
*/
readonly attribute string label;

/* The readonly compositeDevice attribute contains the object reference of the
   AggregateDevice with which this Device is associated or a nil CORBA object
   reference if no association exists.
*/
readonly attribute CF::AggregateDevice compositeDevice;

/* This operation provides the mechanism to request and allocate capacity from the
   Device.

The allocateCapacity operation reduces the current capacities of the Device based
upon the input capacities parameter, when the Device's adminState is UNLOCKED,
Device's operationalState is ENABLED, and Device's usageState is not BUSY.

The allocateCapacity operation sets the Device's usageState attribute to BUSY,
when the Device determines that it is not possible to allocate any further
capacity.

The allocateCapacity operation sets the usageState attribute to ACTIVE, when
capacity is being used and any capacity is still available for allocation.

The allocateCapacity operation returns "True", if the capacities has been
allocated, or "False", if not allocated.

The allocateCapacity operation raises the InvalidCapacity exception, when the
capacities are invalid or the capacity values are the wrong type or ID.

The allocateCapacity operation raises the InvalidState exception, when the Device's
adminState is not UNLOCKED or operationalState is DISABLED.
*/
boolean allocateCapacity (
    in CF::Properties capacities
)
    raises (CF::Device::InvalidCapacity,CF::Device::InvalidState);

/* This operation provides the mechanism to return capacities back to the Device,
   making them available to other users.

The deallocateCapacity operation adjusts the capacities of the Device based upon
the input capacities parameter.
```

The deallocateCapacity operation sets the usageState attribute to ACTIVE when, after adjusting capacities, any of the Device's capacities are still being used.

The deallocateCapacity operation sets the usageState attribute to IDLE when, after adjusting capacities, none of the Device's capacities are still being used.

The deallocateCapacity operation sets the adminState attribute to LOCKED as specified in adminState attribute.

This operation does not return any value.

The deallocateCapacity operation raises the InvalidCapacity exception, when the capacity ID is invalid or the capacity value is the wrong type. The InvalidCapacity exception will state the reason for the exception.

The deallocateCapacity operation raises the InvalidState exception, when the Device's adminState is LOCKED or operationalState is DISABLED.

```
*/
void deallocateCapacity (
    in CF::Properties capacities
)
    raises (CF::Device::InvalidCapacity,CF::Device::InvalidState);

};

/* The TestableObject interface defines a set of operations that can be used to
   test component implementations.
*/
interface TestableObject {

    /* This exception indicates the requested testid for a test to be performed is not
       known by the component.
    */
    exception UnknownTest {

    };

    /* The runTest operation allows components to be "blackbox" tested. This allows
       Built-In Test (BIT) to be implemented and this provides a means to isolate faults
       (both software and hardware) within the system.

       The runTest operation uses the testid parameter to determine which of its predefined
       test implementations should be performed. The testValues parameter Properties
```

(id/value pair(s)) are used to provide additional information to the implementation-specific test to be run. The runTest operation returns the result(s) of the test in the testValues parameter.

Tests to be implemented by a component are component-dependent and are specified in the component's Properties Descriptor. Valid testid(s) and both input and output testValues (properties) for the runTest operation, at a minimum, are test properties defined in the properties test element of the component's Properties Descriptor (refer to Appendix D Domain Profile). The testid parameter corresponds to the XML attribute testid of the property element test in a propertyfile.

Before an UnknownProperties exception is raised by the runTest operation all inputValues properties are validated (i.e., test properties defined in the propertyfile(s) referenced in the component's SPD).

The runTest operation does not execute any testing when the input testid or any of the the input testValues are not known by the component or are out of range.

This operation does not return a value.

The runTest operation raises the UnknownTest exception when there is no underlying test implementation that is associated with the input testid given.

The runTest operation raises CF UnknownProperties exception when the input parameter testValues contains any DataTypes that are not known by the component's test implementation or any values that are out of range for the requested test. The exception parameter invalidProperties contains the invalid inputValues properties id(s) that are not known by the component or the value(s) are out of range.

```
*/
void runTest (
    in unsigned long testid,
    inout CF::Properties testValues
)
    raises (CF::TestableObject::UnknownTest,CF::UnknownProperties);

};

/* The PropertySet interface defines configure and query operations to access component
   properties/attributes.
*/
interface PropertySet {
```

```

/* This exception indicates the configuration of a component has failed (no
   configuration at all was done). The message provides additional information
   describing the reason why the error occurred. The invalid properties returned
   indicates the properties that were invalid.
*/
exception InvalidConfiguration {
    string msg;
    CF::Properties invalidProperties;
};

/* The PartialConfiguration exception indicates the configuration of a Component was
   partially successful. The invalid properties returned indicates the properties that
   were invalid.
*/
exception PartialConfiguration {
    CF::Properties invalidProperties;
};

/* The purpose of this operation is to allow id/value pair configuration properties to
   be assigned to components implementing this interface.

The configure operation shall assign values to the properties as indicated in the
configProperties argument. An component's SPD profile indicates the valid
configuration values. Valid properties for the configure operation are at a
minimum the configure readwrite and writeonly properties referenced in the
component's SPD.

The configure operation raises an InvalidConfiguration exception when a
configuration error occurs that prevents any property configuration on the
component.

This operation raises PartialConfiguration exception when some configuration
properties were successful and some configuration properties were not successful.
*/
void configure (
    in CF::Properties configProperties
)
    raises (CF::PropertySet::InvalidConfiguration,CF::PropertySet::PartialConfiguration);

/* The purpose of this operation is to allow a component to be queried to retrieve its
   properties.

If the configProperties are zero size then, the query operation returns all

```


component properties. If the configProperties are not zero size, then the query operation returns only those id/value pairs specified in the configProperties. An component's SPD profile indicates the valid query types. Valid properties for the query operation are at a minimum the configure readwrite and readonly properties, and allocation properties that have an action value of "external" as referenced in the component's SPD.

This operation raises the CF UnknownProperties exception when one or more properties being requested are not known by the component.

```
*/  
void query (  
    inout CF::Properties configProperties  
)  
    raises (CF::UnknownProperties);  
};  
  
/* The DomainManager interface API is for the control and configuration of the  
radio domain.
```

The DomainManager interface can be logically grouped into three categories:
Human Computer Interface (HCI), Registration, and Core Framework (CF) administration.

1. The HCI operations are used to configure the domain, get the domain's capabilities (Devices, Services, and Applications), and initiate maintenance functions.
Host operations are performed by a client user interface capable of interfacing to the Domain Manager.
2. The registration operations are used to register / unregister DeviceManagers, DeviceManager's Devices, DeviceManager's Services, and Applications at startup or during run-time for dynamic device, service, and application extraction and insertion.
3. The administration operations are used to access the interfaces of registered DeviceManagers, FileManagers, and Loggers of the domain.

During component construction the DomainManager registers itself with the CORBA Naming Service. During Naming Service registration the DomainManager creates a "naming context" using "/DomainName" as its name.ID component and "" (Null string) as its name.kind component, then create a "name binding" to the "/DomainName" naming context using "/DomainManager" as its name.ID component, "" (Null string) as its name.kind component, and the DomainManager's object reference. (See also 3.1.3.2.2.5.1.3)

Since a log service is not a required component of a JTRS installation, a DomainManager implementation may, or may not have access to a Log. However, if log service(s) are available, a DomainManager implementation may use one or more of them. The Logs utilized by the DomainManager implementation shall be defined in the DMD. See Appendix D for further description of the DMD file.

Once a service specified in the DMD is successfully registered with the DomainManager (via registerDeviceManager or registerService operations), the DomainManager begins to use the service (e.g., Log). The DomainManager creates its own FileManager component that consists of all registered DeviceManager's FileSystems. The DomainManager restores ApplicationFactories after startup for applications that were previously installed by the DomainManager installApplication operation. The DomainManager adds the restored ApplicationFactories to the DomainManager's applicationFactories attribute. The DomainManager creates the Incoming Domain Management and Outgoing Domain Management event channels

```
*/
interface DomainManager : PropertySet {

    /* The ApplicationInstallationError exception type is raised when an Application
       installation has not completed correctly. The error number indicates an
       ErrorNumberType value (e.g., CF_EINVAL, CF_ENAMETOOLONG , CF_ENOENT, CF_ENOMEM,
       CF_ENOSPC, CF_ENOTDIR, CF_ENXIO). The message is component-dependent,
       providing additional information describing the reason for the error.
    */
    exception ApplicationInstallationError {
        CF::ErrorNumberType errorNumber;
        string msg;
    };

    /* This type defines an unbounded sequence of Applications. */
    typedef sequence <Application> ApplicationSequence;

    /* This type defines an unbounded sequence of application factories. */
    typedef sequence <ApplicationFactory> ApplicationFactorySequence;

    /* This type defines an unbounded sequence of device managers. */
    typedef sequence <DeviceManager> DeviceManagerSequence;

    /* This exception indicates the application ID is invalid. */
    exception InvalidIdentifier {
```

```
};

/* The DeviceManagerNotRegistered exception indicates the registering Device's
   DeviceManager is not registered in the DomainManager. A Device's DeviceManager
   has to be registered prior to a Device registration to the DomainManager.
*/
exception DeviceManagerNotRegistered {
};

/* The ApplicationUninstallationError exception type is raised when an Application
   uninstallation has not completed correctly. The error number indicates an
   ErrorNumberType value. The message is component-dependent, providing additional
   information describing the reason for the error.
*/
exception ApplicationUninstallationError {
    CF::ErrorNumberType errorNumber;
    string msg;
};

/* The RegisterError exception indicates that an internal error has occurred to
   prevent DomainManager registration operations from successful completion. The error
   number indicates an ErrorNumberType value. The message is component-dependent,
   providing additional information describing the reason for the error.
*/
exception RegisterError {
    CF::ErrorNumberType errorNumber;
    string msg;
};

/* The UnregisterError exception indicates that an internal error has occurred to
   prevent DomainManager unregister operations from successful completion. The error
   number indicates an ErrorNumberType value. The message is component-dependent,
   providing additional information describing the reason for the error.
*/
exception UnregisterError {
    CF::ErrorNumberType errorNumber;
    string msg;
};

/* The AlreadyConnected exception indicates that a registering consumer is already
   connected to the specified event channel.
*/
exception AlreadyConnected {
```

```
};

/* The InvalidEventChannelName exception indicates that a DomainManager was not able
   to locate the event channel.
*/
exception InvalidEventChannelName {
};

/* The NotConnected exception indicates that the unregistering consumer was not
   connected to the specified event channel.
*/
exception NotConnected {
};

/* The domainManagerProfile attribute contains the DomainManager's profile.
   The readonly domainManagerProfile attribute contains either a profile element with
   a file reference to the DomainManager's (DMD) profile or the XML for the
   DomainManager's (DMD) profile. Files referenced within the profile will have to
   be obtained from the DomainManager's FileManager.
*/
readonly attribute string domainManagerProfile;

/* The deviceManagers attribute is read-only containing a sequence of registered
   DeviceManagers in the domain. The DomainManager contains a list of registered
   DeviceManagers that have registered with the DomainManager. The DomainManager
   writes an ADMINISTRATIVE_EVENT log to a DomainManager's Log, when the deviceManagers
   attribute is obtained by a client.
*/
readonly attribute CF::DomainManager::DeviceManagerSequence deviceManagers;

/* The applications attribute is read-only containing a sequence of instantiated
   Applications in the domain. The DomainManager contains a list of Applications that
   have been instantiated. The DomainManager writes an ADMINISTRATIVE_EVENT log record
   to a DomainManager's Log, when the applications attribute is obtained by a client.
*/
readonly attribute CF::DomainManager::ApplicationSequence applications;

/* The readonly applicationFactories attribute contains a list with one
   ApplicationFactory per application (SAD file and associated files) successfully
   installed (i.e. no exception raised). The DomainManager writes an
   ADMINISTRATIVE_EVENT log record to a DomainManager's Log, when the
   applicationFactories attribute is obtained by a client.
*/
```

```
readonly attribute CF::DomainManager::ApplicationFactorySequence applicationFactories;
```

/* The fileMgr attribute is read only containing the mounted FileSystems in the domain.
The DomainManager writes an ADMINISTRATIVE_EVENT log record to a DomainManager's
Log, when the fileMgr attribute is obtained by a client.
*/

```
readonly attribute CF::FileManager fileMgr;
```

/* The readonly identifier attribute contains a unique identifier for a DomainManager
instance. The identifier is identical to the domainmanagerconfiguration element id
attribute of the DomainManager's Descriptor (DMD) file.
*/

```
readonly attribute string identifier;
```

/* The registerDevice operation verifies that the input parameters, registeringDevice
and registeredDeviceMgr, are not nil CORBA component references.

The registerDevice operation adds the registeringDevice and the registeringDevice's
attributes (e.g., identifier, softwareProfile's allocation properties, etc.) to
the DomainManager, if it does not already exist.

The registerDevice operation associates the input registeringDevice with the input
registeredDeviceMgr in the DomainManager when the input registeredDeviceMgr is a
valid registered DeviceManager in the DomainManager.

When the registering Device's parent DeviceManager's DCD describes service
connections for the registering Device, the registerDevice operation shall
establish the connections.

The registerDevice operation, upon successful device registration, writes an
ADMINISTRATIVE_EVENT log record to a DomainManager's Log, to indicate that the
device has successfully registered with the DomainManager.

Upon unsuccessful device registration, the registerDevice operation writes a
FAILURE_ALARM log record to a DomainManager's Log, when the InvalidProfile
exception is raised to indicate that the registeringDevice has an invalid profile.

Upon unsuccessful device registration, the registerDevice operation logs a
Failure_Alarm event with DomainManager's Logger for the DeviceManagerNotRegistered
exception to indicate that the device that cannot be registered to the Device due
to the DeviceManager is not registered with the DomainManager.

Upon unsuccessful device registration, the registerDevice operation writes a FAILURE_ALARM log record to a DomainManager's Log, indicating that the device could not register because the DeviceManager is not registered with the DomainManager.

Upon unsuccessful device registration, the registerDevice operation writes a FAILURE_ALARM log record to a DomainManager's Log, because of an invalid reference input parameter.

Upon unsuccessful device registration, the registerDevice operation shall write a FAILURE_ALARM log record to a DomainManager's Log, because of an internal registration error.

The registerDevice operation, upon successful Device registration, sends an event to the Outgoing Domain Management event channel with event data consisting of a DomainManagementObjectAddedEventType. The event data will be populated as follows:

1. The producerId is the identifier attribute of the DomainManager.
2. The sourceId is the identifier attribute of the registered Device.
3. The sourceName is the label attribute of the registered Device.
4. The sourceIOR is the registered Device object reference.
5. The sourceCategory is DEVICE.

The registerDevice operation raises the CF InvalidProfile exception when:

1. The Device's SPD file and the SPD's referenced files do not exist or cannot be processed due to the file not being compliant with XML syntax, or
2. The Device's SPD does not reference allocation properties.

The registerDevice operation raises a DeviceManagerNotRegistered exception when the input registeredDeviceMgr (not nil reference) is not registered with the DomainManager.

The registerDevice operation raises the CF InvalidObjectReference exception when input parameters registeringDevice or registeredDeviceMgr contains an invalid reference.

The registerDevice operation raises the RegisterError exception when an internal

```
error exists which causes an unsuccessful registration.
*/
void registerDevice (
    in CF::Device registeringDevice,
    in CF::DeviceManager registeredDeviceMgr
)
    raises
    (CF::InvalidObjectReference,CF::InvalidProfile,CF::DomainManager::DeviceManagerNotRegistered,CF::Do
mainManager::RegisterError);

/* The registerDeviceManager operation verifies that the input parameter, deviceMgr,
is a not a nil CORBA component reference.
```

The registerDeviceManager operation adds the input deviceMgr to the DomainManager's deviceManagers attribute, if it does not already exist. The registerDeviceManager operation adds the input deviceMgr's registeredDevices and each registeredDevice's attributes (e.g., identifier, softwareProfile's allocation properties, etc.) to the DomainManager. The registerDeviceManager operation associates the input deviceMgr's with the input deviceMgr's registeredDevices in the DomainManager in order to support the unregisterDeviceManager operation.

The registerDeviceManager operation adds the input deviceMgr's registeredServices and each registeredService's names to the DomainManager. The registerDeviceManager operation associates the input deviceMgr's with the input deviceMgr's registeredServices in the DomainManager in order to support the unregisterDeviceManager operation.

The registerDeviceManager operation performs the connections as specified in the connections element of the deviceMgr's Device Configuration Descriptor (DCD) file. If the DeviceManager's Device Configuration Descriptor (DCD) describes a connection for a service that has not been registered with the DomainManager, the registerDeviceManager operation establishes any pending connection when the service registers with the DomainManager by the registerDeviceManager operation.

For connections established for a CORBA Event Service's event channel, the registerDeviceManager operation connects a CosEventComm PushConsumer or PushSupplier object to the event channel as specified in the DCD's domainfinder element. If the event channel does not exist, the registerDeviceManager operation creates the event channel.

The registerDeviceManager operation obtains all the Software profiles from the registering DeviceManager's FileSystems.

The registerDeviceManager operation mounts the DeviceManager's FileSystem to the

DomainManager's FileManager. The mounted FileSystem name will have the format, "/DomainName/HostName", where DomainName is the name of the domain and HostName is the input deviceMgr's label attribute.

The registerDeviceManager operation, upon unsuccessful DeviceManager registration, writes a FAILURE_ALARM log record to a DomainManager's Log.

The registerDeviceManager operation, upon successful DeviceManager registration, sends an event to the Outgoing Domain Management event channel with event data consisting of a DomainManagementObjectAddedEventType. The event data will be populated as follows:

1. The producerId is the identifier attribute of the DomainManager.
2. The sourceId is the identifier attribute of the registered DeviceManager.
3. The sourceName is the label attribute of the registered DeviceManager.
4. The sourceIOR is the registered DeviceManager object reference.
5. The sourceCategory is DEVICE_MANAGER

The registerDeviceManager operation raises the CF InvalidObjectReference exception when the input parameter deviceMgr contains an invalid reference to a DeviceManager interface.

The registerDeviceManager operation raises the RegisterError exception when an internal error exists which causes an unsuccessful registration.

```
*/  
void registerDeviceManager (  
    in CF::DeviceManager deviceMgr  
)  
    raises  
(CF::InvalidObjectReference, CF::InvalidProfile, CF::DomainManager::RegisterError);  
  
/* The unregisterDeviceManager operation is used to unregister a DeviceManager  
   component from the DomainManager's Domain Profile. A DeviceManager may be  
   unregistered during run-time for dynamic extraction or maintenance of the  
   DeviceManager.
```

The unregisterDeviceManager operation unregisters a DeviceManager component from the DomainManager.

The unregisterDeviceManager operation releases (client-side CORBA release) all device(s) and service(s) associated with the DeviceManager that is being unregistered.

The unregisterDeviceManager operation disconnects consumers and producers (e.g., Devices, Log, DeviceManager, etc.) from a CORBA Event Service event channel based upon the software profile. The unregisterDeviceManager operation may destroy the CORBA Event Service event channel when no more consumers and producers are connected to it.

The unregisterDeviceManager operation shall unmount all DeviceManager's FileSystems from its File Manager.

The unregisterDeviceManager operation, upon the successful unregistration of a DeviceManager, writes an ADMINISTRATIVE_EVENT log record to a DomainManager's Log.

The unregisterDeviceManager operation, upon unsuccessful unregistration of a DeviceManager, writes a FAILURE_ALARM log record to a DomainManager's Log.

The unregisterDeviceManager operation, upon successful unregistration, sends an event to the Outgoing Domain Management event channel with event data consisting of a DomainManagementObjectRemovedEventType. The event data will be populated as follows:

1. The producerId is the identifier attribute of the DomainManager.
2. The sourceId is the identifier attribute of the unregistered DeviceManager.
3. The sourceName is the label attribute of the unregistered DeviceManager.
4. The sourceCategory is DEVICE_MANAGER.

The unregisterDeviceManager operation raises the CF InvalidObjectReference when the input parameter DeviceManager contains an invalid reference to a DeviceManager interface.

The unregisterDeviceManager operation raises the UnregisterError exception when an internal error exists which causes an unsuccessful unregistration.

*/

```
void unregisterDeviceManager (  
    in CF::DeviceManager deviceMgr
```

```
)  
    raises (CF::InvalidObjectReference,CF::DomainManager::UnregisterError);  
  
/* The unregisterDevice operation is used to remove a device entry from the  
   DomainManager for a specific DeviceManager.  
  
   The unregisterDevice operation releases (client-side CORBA release) the  
   unregisteringDevice from the DomainManager.  
  
   The unregisterDevice operation disconnects the Device's consumers and producers  
   from a CORBA Event Service event channel based upon the software profile. The  
   unregisterDevice operation may destroy the CORBA Event Service event channel when  
   no more consumers and producers are connected to it.  
  
   The unregisterDevice operation, upon the successful unregistration of a Device,  
   writes an ADMINISTRATIVE_EVENT log record to a DomainManager's Log.  
  
   The unregisterDevice operation, upon unsuccessful unregistration of a Device,  
   writes a FAILURE_ALARM log record to a DomainManager's Log.  
  
   The unregisterDevice operation, upon successful Device unregistration, sends an  
   event to the Outgoing Domain Management event channel with event data consisting  
   of a DomainManagementObjectRemovedEventType. The event data will be populated as  
   follows:  
  
   1. The producerId is the identifier attribute of the DomainManager.  
  
   2. The sourceId is the identifier attribute of the unregistered Device.  
  
   3. The sourceName is the lable attribute of the unregistered Device.  
  
   4. The sourceCategory is DEVICE.  
  
   The unregisterDevice operation raises the CF InvalidObjectReference exception when  
   the input parameter contains an invalid reference to a Device interface.  
  
   The unregisterDevice operation raises the UnregisterError exception whan an  
   internal error exists which causes an unsuccessful unregistration.  
*/  
void unregisterDevice (  
    in CF::Device unregisteringDevice  
)
```

```
raises (CF::InvalidObjectReference,CF::DomainManager::UnregisterError);
```

```
/* This operation is used to register new application software in the DomainManager's  
Domain Profile. An installer application typically invokes this operation when it  
has completed the installation of a new Application into the domain.
```

The profileFileName is the absolute path of the profile filename.

The installApplication operation verifies the application's SAD file exists in the DomainManager's FileManager and all the files the application is dependent on are also resident.

The installApplication operation writes an ADMINISTRATIVE_EVENT log Record to a DomainManager's Log, upon successful Application installation.

The installApplication operation, upon successful application installation, sends an event to the Outgoing Domain Management event channel with event data consisting of a DomainManagementObjectAddedEventType. The event data will be populated as follows:

1. The producerId is the identifier attribute of the DomainManager.
2. The sourceId is the identifier attribute of the installed ApplicationFactory.
3. The sourceName is the name attribute of the installed ApplicationFactory.
4. The sourceIOR is the installed ApplicationFactory object reference.
5. The sourceCategory is APPLICATION_FACTORY.

The installApplication operation raises the ApplicationInstallationError exception when the installation of the Application file(s) was not successfully completed.

The installApplication operation raises the CF InvalidFileName exception when the input SAD file or any referenced file name does not exist in the file system as defined in the absolute path of the input profileFileName. The installApplication operation logs a FAILURE_ALARM log record to a DomainManger's Log when the InvalidFileName exception occurs and the logged message shall be "installApplication:: invalid file is xxx", where "xxx" is the input or referenced file name is bad.

The installApplication operation raises the CF InvalidProfile exception when the input SAD file or any referenced file is not compliant with XML DTDs defined in Appendix D or referenced property definitions are missing. The installApplication operation s logs a FAILURE_ALARM log record ot a DomainManager's Log when the CF InvalidProfile exception occurs and the logged message shall be "installApplication:: invalid Profile is yyy," where "yyy" is and the input or referenced file name that is bad along with the element or position within the profile that is bad.

```
*/  
void installApplication (  
    in string profileFileName  
)  
    raises  
(CF::InvalidProfile,CF::InvalidFileName,CF::DomainManager::ApplicationInstallationError);
```

/* This operation is used to uninstall an application from the DomainManager.

The CF Installer typically invokes this operation when removing an application from the radio domain.

The ApplicationID parameter is the softwareassembly element id attribute of the ApplicationFactory's Software Assembly Descriptor file.

The uninstallApplication operation removes all files associated with the Application.

The uninstallApplication operation makes the ApplicationFactory unavailable from the DomainManager (i.e. its services no longer provided for the Application).

The uninstallApplication operation, upon successful uninstall of an Application, writes an ADMINISTRATIVE_EVENT log record to a DomainManager's Log.

The uninstallApplication operation, upon unsuccessful uninstall of an Application, writes a FAILURE_ALARM log record to a DomainManager's Log.

The uninstallAppliclction operation, upon successful uninstall of an application, sends an event to the Outgoing Domain Management event channel with event data consisting of a DomainManagementObjectRemovedEventType. The event data will be populated as follows:

1. The producerId is the identifier attribute of the DomainManager.
2. The sourceId is the identifier attribute of the uninstalled ApplicationFactory.

3. The sourceName is the name attribute of the uninstalled ApplicationFactory.

4. The sourceCategory is APPLICATION_FACTORY.

The uninstallApplication operation raises the InvalidIdentifier exception when the ApplicationID is invalid.

The uninstallApplication operation raises the ApplicationUninstallationError exception when an internal error causes unsuccessful uninstall of the application.

```
*/  
void uninstallApplication (  
    in string applicationId  
)  
    raises  
(CF::DomainManager::InvalidIdentifier, CF::DomainManager::ApplicationUninstallationError);  
  
/* This operation is used to register a service for a specific DeviceManager with the  
DomainManager.
```

The registerService operation verifies the input registeringService and registeredDeviceMgr are valid object references.

The registerService operation verifies the input registeredDeviceMgr has been previously registered with the DomainManager.

The registerService operation adds the registeringService's object reference and the registeringService's name to the DomainManager, if the name for the type of service being registered does not exist within the DomainManager. However, if the name of the registering service is a duplicate of a registered service of the same type, then the new service is not registered with the DomainManager.

The registerService operation associates the input registeringService parameter with the input registeredDeviceMgr parameter in the DomainManager's, when the registeredDeviceMgr parameter indicates a DeviceManager registered with the DomainManager.

The registerService operation, upon successful service registration, establishes any pending connection requests for the registeringService. The registerService operation, upon successful service registration, writes an ADMINISTRATIVE_EVENT log record to a DomainManager's Log.

The registerService operation, upon unsuccessful service registration, writes a FAILURE_ALARM log record to a DomainManager's Log.

The registerService operation, upon successful service registration, sends an event to the Outgoing Domain Management event channel with event data consisting of a DomainManagementObjectAddedEventType. The event data will be populated as follows:

1. The producerId is the identifier attribute of the DomainManager.
2. The sourceId is the identifier attribur from the componentinstantiation element associated with the registered service.
3. The sourceName is the input name parameter for the registering service.
4. The sourceIOR is the registered service object reference.
5. The sourceCategory is SERVICE.

This operation does not return a value.

The registerService operation raises a DeviceManagerNotRegistered exception when the input registeredDeviceMgr parameter is not a nil reference and is not registered with the DomainManager.

The registerService operation raises the CF InvalidObjectReference exception when input parameters registeringService or registeredDeviceMgr contains an invalid reference.

The registerService operation raises the RegisterError exception whn an internal error exists which causes an unsuccessful registration.

```
*/  
void registerService (  
    in Object registeringService,  
    in CF::DeviceManager registeredDeviceMgr,  
    in string name  
)  
    raises  
(CF::InvalidObjectReference, CF::DomainManager::DeviceManagerNotRegistered, CF::DomainManager::RegisterError);  
  
/* This operation is used to remove a service entry from the DomainManager for a  
specific DeviceManager.
```

The unregisterService operation removes the unregisteringService entry specified by the input parameter from the DomainManager.

The unregisterService operation releases (client-side CORBA release) the unregisteringService from the DomainManager.

The unregisterService operation, upon the successful unregistration of a Service, writes an ADMINISTRATIVE_EVENT log record to a DomainManager's Log.

The unregisterService operation, upon unsuccessful unregistration of a Service, writes a FAILURE_ALARM log record to a DomainManager's Log.

The unregisterService operation, upon successful service unregistration, sends an event to the Outgoing Domain Management event channel with event data consisting of a DomainManagementObjectRemovedEventType. The event data will be populated as follows:

1. The producerId is the identifier attribute of the DomainManager.
2. The sourceId is the ID attribute from the componentinstantiation element associated with the unregistered service.
3. The sourceName is the input name parameter for the unregistering service.
4. The sourceCategory is SERVICE.

This operation does not return a value.

The unregisterService operation raises the CF InvalidObjectReference exception when the input parameter contains an invalid reference to a Service interface.

The unregisterService operation raises the UnregisterError exception when an internal error exists which causes an unsuccessful unregistration.

```
*/
void unregisterService (
    in Object unregisteringService,
    in string name
)
    raises (CF::InvalidObjectReference,CF::DomainManager::UnregisterError);

/* The registerWithEventChannel operation is used to connect a consumer to a domain's
event channel.
```

The registerWithEventChannel operation connects the input registeringConsumer to event channel as specified by the input eventChannelName.

This operation does not return a value.

The registerWithEventChannel operation raises the CF InvalidObjectReference exception when the input parameter contains an invalid reference to a CosEventComm PushConsumer interface.

The registerWithEventChannel operation raises the InvalidEventChannelName exception when the input parameter contains an invalid event channel name (e.g, "ODM_Channel").

The registerWithEventChannel operation raises AlreadyConnected exception when the input parameter contains a connection to the event channel for the input registeringConsumerId parameter.

```
*/
void registerWithEventChannel (
    in Object registeringObject,
    in string registeringId,
    in string eventChannelName
)
    raises
(CF::InvalidObjectReference,CF::DomainManager::InvalidEventChannelName,CF::DomainManager::AlreadyCo
nnected);
```

```
/* The unregisterFromEventChannel operation is used to disconnect a consumer from a
domain's event channel.
```

The unregisterFromEventChannel operation shall disconnect a registered consumer from the event channel as identified by the input parameters.

This operation does not return a value.

The unregisterFromEventChannel operation raises the InvalidEventChannelName exception when the input parameter contains an invalid reference to an event channel (e.g., "ODM_Channel").

The unregisterWithEventChannel operation raises NotConnected exception when the input parameter registeringConsumerId parameter is not connected to specified input event channel.

```
*/
void unregisterFromEventChannel (
    in string unregisteringId,
```



```
        in string eventChannelName
    )
    raises (CF::DomainManager::InvalidEventChannelName,CF::DomainManager::NotConnected);

};
```

/* The Application delegates the implementation of the inherited Resource operations (runTest, start, stop, configure, and query) to the Application's Resource component (Assembly Controller) identified by the Application's SAD assemblycontroller element.. The Application propagates exceptions raised by the Application's Assembly Controller's operations. The initialize operation is not propagated to the Application's components or its Assembly Controller. The initialize operation causes no action within an Application.

The releaseObject operation terminates execution of the Application, returns all allocated computing resources, and de-allocates the Resources' capabilities in use by the devices associated with Application. Before terminating, the Application removes the message connectivity with its associated Applications (e.g. Ports, Resources, and Logs) in the domain.

For each Application component not created by a ResourceFactory, the releaseObject operation releases the component by utilizing the Resources's releaseObject operation. If the component was created by a ResourceFactory, the releaseObject operation releases the component by the ResourceFactory releaseResource operation. The releaseObject operation shutdowns a ResourceFactory when no more Resources are managed by the ResourceFactory.

For each allocated device capable of operation execution, the releaseObject operation terminates all processes / tasks of the Application's components utilizing the Device's terminate operation.

For each allocated device capable of memory function, the releaseObject operation de-allocates the memory associated with Application's component instances utilizing the Device's unload operation.

The releaseObject operation deallocates the Devices that are associated with the Application being released, based on the Application's Software Profile. The actual devices deallocated (Device::deallocateCapacity) will reflect changes in capacity based upon component capacity requirements deallocated from them, which may also cause state changes for the Devices.

The Application releases all client component references to the Application

components.

The `releaseObject` operation disconnects Ports from other Ports that have been connected based upon the software profile.

The `releaseObject` operation disconnects consumers and producers from a CORBA Event Service's event channel based upon the software profile. The `releaseObject` operation may destroy a CORBA Event Service's event channel when no more consumers and producers are connected to it.

For components (e.g., `Resource`, `ResourceFactory`) that are registered with Naming Service, the `releaseObject` operation unbinds those components and destroy the associated naming contexts as necessary from the Naming Service. The `releaseObject` operation for an application disconnects Ports first, then release the `Resources` and `ResourceFactories`, then call the `terminate` operation, and lastly call the `unload` operation on the devices.

The `releaseObject` operation, upon successful Application release, writes an `ADMINISTRATIVE_EVENT` log record.

The `releaseObject` operation, upon unsuccessful Application release, writes a `FAILURE_ALARM` log record.

The `releaseObject` operation, upon successful Application release, sends an event to the Outgoing Domain Management event channel with event data consisting of a `DomainManagementObjectRemovedEventType`. The event data will be populated as follows:

1. The `producerId` is the identifier attribute of the released Application.
2. The `sourceId` is the identifier attribute of the released Application.
3. The `sourceName` is the name attribute of the released Application.
4. The `sourceCategory` is `APPLICATION`

*/

```
interface Application : Resource {
```

```
    /* The ComponentProcessIdType defines a type for associating a component with its
       process ID. This type can be used to retrieve a process ID for a specific
       component.
```

```
    */
```

```
    struct ComponentProcessIdType {
```

```

    /* The componentID is a ID of a component that corresponds to the application's
       SAD componentinstantiation's ID attribute value.
    */
    string componentID;

    /* The process ID of the executable component. */
    unsigned long processId;
};

/* The ComponentProcessIdSequence type defines an unbounded sequence of components'
   process IDs.
*/
typedef sequence <ComponentProcessIdType> ComponentProcessIdSequence;

/* The ComponentElementType defines a type for associating a component with an
   element (e.g., naming context, implementation ID).
*/
struct ComponentElementType {
    /* The componentID is a ID of a component that corresponds to the application's
       SAD componentinstantiation's ID attribute value. */
    string componentId;
    /* The element ID that is associated with component ID. */
    string elementId;
};

/* The componentElementSequence defines an unbounded sequence of ComponentElementTypes.
*/
typedef sequence <ComponentElementType> ComponentElementSequence;

/* The componentNamingContexts attribute contains the list of components' Naming
   Service Context within the Application for those components using CORBA Naming
   Service.
*/
readonly attribute CF::Application::ComponentElementSequence componentNamingContexts;

/* The componentProcessIds attribute contains the list of components' process IDs
   within the Application for components that are executing on a device.
*/
readonly attribute CF::Application::ComponentProcessIdSequence componentProcessIds;

/* The componentDevices attribute shall contain a list of devices which each
   component either uses, is loaded on or is executed on. Each component

```

```
(componentinstantiation element in the Application's software profile) is
associated with a device.
*/
readonly attribute CF::DeviceAssignmentSequence componentDevices;

/* The componentImplementations attribute contains the list of components' SPD
implementation IDs within the Application for those components created.
*/
readonly attribute CF::Application::ComponentElementSequence componentImplementations;

/* This attribute is the XML profile information for the application. The string value
contains either a profile element with a file reference to the SAD profile file or
the actual xml for the SAD profile. Files referenced within a profile will have to
be obtained via a FileManager. The Application will have to be queried for profile
information for Component files that are referenced by an ID instead of a file
name.
*/
readonly attribute string profile;

/* This name attribute contains the name of the created Application. The
ApplicationFactory interface's create operation name parameter provides the name
content.
*/
readonly attribute string name;
};

/* The ApplicationFactory interface class provides an interface to request the
creation of a specific type (e.g., SINGGARS, LOS, Havequick, etc.) of
Application in the domain. The ApplicationFactory interface class is designed
using the Factory Design Pattern. The Software Profile determines the type of
Application that is created by the ApplicationFactory.
*/
interface ApplicationFactory {

/* This exception is raised when the parameter DeviceAssignmentSequence contains one
(1) or more invalid Application component-to-device assignment(s).
*/
exception CreateApplicationRequestError {
    CF::DeviceAssignmentSequence invalidAssignments;
};

/* The CreateApplicationError exception is raised when a create request is valid but
the Application is unsuccessfully instantiated due to internal processing errors.
```

```

The error number indicates an ErrorNumberType value (e.g., CF_E2BIG,
CF_ENAMETOOLONG, CF_ENFILE, CF_ENODEV, CF_ENOENT, CF_ENOEXEC, CF_ENOMEM,
CF_ENOTDIR, CF_ENXIO, CF_EPERM). The message is component-dependent, providing
additional information describing the reason for the error.
*/
exception CreateApplicationError {
    CF::ErrorNumberType errorNumber;
    string msg;
};

/* The invalidInitConfiguration exception is raised when the input initConfiguration
parameter is invalid.
*/
exception InvalidInitConfiguration {
    CF::Properties invalidProperties;
};

/* The name attribute contains the name of the type of Application that can be
instantiated by the ApplicationFactory (e.g., SINCGARS, LOS, Havequick, DAMA25,
etc.).
*/
readonly attribute string name;

/* The readonly identifier attribute contains the unique identifier for an
ApplicationFactory instance. The identifier is identical to the softwareassembly
element id attribute of the ApplicationFactory's Software Assembly Descriptor file.
*/
readonly attribute string identifier;

/* This attribute contains the application software profile that this factory uses
when creating an application. The string value contains either a profile element
with a file reference to the SAD profile file or the actual xml for the SAD
profile. Files referenced within the profile will have to be obtained from a
FileManager. The ApplicationFactory will have to be queried for profile information
for Component files that are referenced by an ID instead of file name.
*/
readonly attribute string softwareProfile;

/* This operation is used to create an Application within the system domain.

```

The create operation provides a client interface to request the creation of an Application on client requested device(s) or the creation of an Application in which the ApplicationFactory determines the necessary device(s) required for

instantiation of the Application.

An Application can be comprised of one or more components (e.g., Resources, Devices, etc.). The SAD contains Software Package Descriptors (SPDs) for each Application component. The SPD specifies the Device implementation criteria for loading dependencies (processor kind, etc.) and processing capacities (e.g., memory, process) for an application component. The create operation uses the SAD SPD implementation element to locate candidate devices capable of loading and executing Application components.

If deviceAssignments (not zero length) are provided, the ApplicationFactory verifies each device assignment, for the specified component, against the component's SPD implementation element.

The create operation allocates (Device allocateCapacity) component capacity requirements against candidate devices to determine which candidate devices satisfy all SPD implementation criteria requirements and SAD partitioning requirements (e.g., components HostCollocation, etc.). The create operation only uses Devices that have been granted successful capacity allocations for loading and executing Application components, or used for data processing. The actual Devices chosen will reflect changes in capacity based upon component capacity requirements allocated to them, which may also cause state changes for the Devices.

The create operation loads the Application components (including all of the Application-dependent components) to the chosen device(s).

The create operation executes the application components (including all of the application-dependent components) as specified in the application's Software Assembly Descriptor (SAD) file. The create operation uses each component's SPD implementation code's stack size and priority elements, when specified, for the execute options parameters.

The create operation passes the mandatory execute parameters of a Naming Context IOR, Name Binding, and the identifier for the component in the form of CF Properties to the entry points of Resource components to be executed via a Device's execute operation.

The execute parameter for the Naming Context IOR is inserted into a CF Properties type. The CF Properties ID element is set to "NAMING_CONTEXT_IOR" and the CF Properties value element set to the stringified IOR of a naming context to which the component will bind. The create operation creates any naming contexts that do not exist to which the component will bind to the Naming Context IOR. The structure of the naming context path is "/ DomainName / [optional naming context sequences]".

In the naming context path, each "slash" (/) represents a separate naming context.

The execute parameter of Name Binding is inserted into a CF Properties type. The CF Properties ID element is set to "NAME_BINDING" and CF Properties value element set to a string in the format of "ComponentName_UniqueIdentifier". The ComponentName value is the SAD componentinstantiation findcomponent namingservice element's name attribute. The UniqueIdentifier is determined by the implementation. The Name Binding parameter is used by the component to bind its object reference to the Naming Context IOR parameter.

The create operation uses "ComponentName_UniqueIdentifier" to retrieve the component's object reference from the Naming Context IOR (See also section 3.2.1.3.). Due to the dynamics of bind and resolve to CORBA Naming Service, the create operation should provide sufficient attempts to retrieve component object references from CORBA Naming Service prior to generating an exception.

For the component identifier execute parameter, the create operation is inserted in a CF Properties type. The CF Properties ID element is set to "COMPONENT_IDENTIFIER" and the CF Properties value element to the string format of Component_Instantiation_Identifier:Application_Name. The Component_Instantiation_Identifier is created using the componentinstantiation element id attribute for the component in the application's SAD file. The Application_Name field is identical to the create operation's input name parameter. The Application_Name field provides a specific instance qualifier for executed Resource components.

The create operation passes the componentinstantiation element "execparam" properties that have values as parameters to execute operation. The create operation passes "execparam" parameters values as string values.

The create operation, in order, initializes Resources, then establishes connections for Resources, and finally configures the Resources.

The create operation will only configure the application's assemblycontroller component.

The create operation initializes an Application component provided the component implements the LifeCycle interface.

The create operation configures an application's assemblycontroller component provided the assemblycontroller has configure readwrite or writeonly properties with values. The create operation uses the union of the input initConfiguration properties of the create operation and the assemblycontroller's

componentinstantiation writeable "configure" properties that have values. The input initConfiguration parameter has precedence over the assemblycontroller's writeable "configure" property values. The create operation, when creating a component from a ResourceFactory, passes the componentinstantiation componentresourcefactoryref element "factoryparam" properties that have values as qualifiers parameters to the referenced ResourceFactory component's createResource operation.

The create operation interconnects Application components' (Resources' or Devices') ports in accordance with the SAD. The create operation obtains Ports in accordance with the SAD via Resource getPort operation. The create operation uses the SAD connectinterface element id attribute as the unique identifier for a specific connection when provided. The create operation creates a connection ID when no SAD connectinterface element attribute id is specified for a connection. The create operation obtains a Resource in accordance with the SAD via the CORBA Naming Service or a ResourceFactory.. The ResourceFactory can be obtained by using the CORBA Naming Service.

The create operation passes, with invocation of each ResourceFactory createResource operation, the ResourceFactory configuration properties associated with that Resource as dictated by the SAD.

The dependencies to Log, FileManager, FileSystem, CORBA Event Service, and CORBA Naming Service will be specified as connections in the SAD using the domainfinder element. The create operation will establish these connections. For connections established for a CORBA Event Service's event channel, the create operation connects a CosEventComm PushConsumer or PushSupplier object to the event channel as specified in the SAD's domainfinder element. If the event channel does not exist, the create operation creates the event channel.

If the Application is successfully created, the create operation shall return an Application component reference for the created Application. A sequence of created Application references can be obtained using the DomainManager's readonly applications attribute.

The create operation, upon successful Application creation, writes an ADMINISTRATIVE_EVENT log record.

The create operation, upon unsuccessful Application creation, writes a FAILURE_ALARM log record.

The dependencies to Log, FileManager, and FileSystem will appear as connections in the SAD using the domainfinder element. The create operation will establish

these connections.

The create operation, upon successful Application creation, sends an event to the Outgoing Domain Management event channel with event data consisting of a DomainManagementObjectAddedEventType. The event data will be populated as follows:

1. The producerId is the identifier attribute of the ApplicationFactory.
2. The sourceId is the identifier attribute of the created Application.
3. The sourceName is the anme attribute of the created Application.
4. The sourceIOR is the Application component reference for the created Application.
5. The sourceCategory is APPLICATION.

The create operation raises the CreateApplicationRequestError exception when the parameter CF DeviceAssignmentSequence contains one (1) or more invalid Application component to device assignment(s).

The create operation raises the CreateApplicationError exception when the create request is valid but the Application can not be successfully instantiated due to internal processing error(s).

The create operation raises the InvalidInitConfiguration exception when the input initConfiguration parameter is invalid. The InvalidInitConfiguration invalidProperties1 identifies the property that is invalid.

```
*/
CF::Application create (
    in string name,
    in CF::Properties initConfiguration,
    in CF::DeviceAssignmentSequence deviceAssignments
)
    raises
(CF::ApplicationFactory::CreateApplicationError,CF::ApplicationFactory::CreateApplicationRequestErr
or,CF::ApplicationFactory::InvalidInitConfiguration);
```

```
};
```

```
/* This interface extends the LoadableDevice interface by adding execute and
    terminate behavior to a Device.
```

```
*/
interface ExecutableDevice : LoadableDevice {
```

```
/* The InvalidProcess exception indicates that a process, as identified by the
   processID parameter, does not exist on this device. The error number indicates an
   ErrorNumberType value (e.g., CF_ESRCH, CF_EPERM, CF_EINVAL). The message is
   component-dependent, providing additional information describing the reason for
   the error.
*/
exception InvalidProcess {
    CF::ErrorNumberType errorNumber;
    string msg;
};

/* This exception indicates that a function, as identified by the input name parameter,
   hasn't been loaded on this device.
*/
exception InvalidFunction {
};

/* This type defines a process number within the system. Process number is unique to
   the Processor operating system that created the process.
*/
typedef long ProcessID_Type;

/* The InvalidParameters exception indicates the input parameters are invalid on the
   execute operation. This exception is raised when there are invalid execute
   parameters. Each parameter's ID and value must be a valid string type. The
   invalidParms is a list of invalid parameters specified in the execute operation.
*/
exception InvalidParameters {
    /* The invalidParms is a list of invalid parameters specified in the execute or
       executeProcess operation. Each parameter's ID and value must be a string type.
    */
    CF::Properties invalidParms;
};

/* The InvalidOptions exception indicates the input options are invalid on the
   execute operation. The invalidOpts is a list of invalid options specified in the
   execute operation.
*/
exception InvalidOptions {

    /* The invalidParms is a list of invalid parameters specified in the execute or
```

```

        executeProcess operation. Each parameter's ID and value must be a string type.
    */
    CF::Properties invalidOpts;
};

/* The STACK_SIZE_ID is the identifier for the ExecutableDevice's execute options
   parameter. The value for a stack size is an unsigned long.
*/
    const string STACK_SIZE_ID = "STACK_SIZE";

/* The PRIORITY_ID is the identifier for the ExecutableDevice's execute options
   parameters. The value for a priority is an unsigned long.
*/
const string PRIORITY_ID = "PRIORITY";

/* The ExecuteFail exception indicates that the Execute operation failed due to
   device dependent reasons. The ExecuteFail exception indicates that an error
   occurred during an attempt to invoke the execute function on the device.
   The error number indicates an ErrorNumberType value (e.g. CF_EACCES, CF_EBADF,
   CF_EINVAL, CF_EIO, CF_EMFILE, CF_ENAMETOOLONG, CF_ENOENT, CF_ENOMEM, CF_ENOTDIR).
   The message is component-dependent, providing additional information describing
   the reason for the error.
*/
exception ExecuteFail {
    CF::ErrorNumberType errorNumber;
    string msg;
};

/* The terminate operation provides the mechanism for terminating the execution of a
   process/thread on a specific device that was started up with the execute operation.

   The terminate operation terminates the execution of the process/thread designated
   by the processId input parameter on the Device.

   This operation does not return a value.

   The terminate operation raises the InvalidState exception when the Device's
   adminState is LOCKED or operationalState is DISABLED.

   The terminate operation raises the InvalidProcess exception when the processId
   does not exist for the Device.
*/
void terminate (

```

```
in CF::ExecutableDevice::ProcessID_Type processId
)
raises (CF::ExecutableDevice::InvalidProcess,CF::Device::InvalidState);

/* This operation provides the mechanism for starting up and executing a software
process/thread on a device.

The execute operation executes the function or file identified by the input name
parameter using the input parameters and options parameters. Whether the input name
parameter is a function or a file name is device-implementation-specific. The
execute operation converts the input parameters (id/value string pairs) parameter
to the standard argv of the POSIX exec family of functions, where argv(0) is the
function name. The execute operation maps the input parameters parameter to
argv starting at index 1 as follows, argv (1) maps to input parameters (0) id and
argv (2) maps to input parameters (0) value and so forth. The execute operation
passes argv through the operating system "execute" function.

The execute operation input options parameters are STACK_SIZE_ID and PRIORITY_ID.
The execute operation uses these options, when specified, to set the operating
system's process/thread stack size and priority, for the executable image of the
given input name parameter.

The execute operation returns a unique processID for the process that it created
or a processID of minus 1 (-1) when a process is not created.

The execute operation raises the InvalidState exception when the Device's
adminState is not UNLOCKED or operationalState is DISABLED.

The execute operation raises the InvalidFunction exception when the function
indicated by the input name parameter does not exist for the Device.

The execute operation raises the CF InvalidFileName exception when the file name
indicated by the input name parameter does not exist for the Device.

The execute operation raises the InvalidParameters exception when the input
parameters parameter item ID and value are not string types.

The execute operation raises the InvalidOptions exception when the input options
parameter does not comply with STACK_SIZE_ID and PRIORITY_ID options.

The execute operation raises the ExecuteFail exception when the operating system
"execute" function for the device is not successful.

*/
```

```

CF::ExecutableDevice::ProcessID_Type execute (
    in string name,
    in CF::Properties options,
    in CF::Properties parameters
)
    raises
(CF::Device::InvalidState,CF::ExecutableDevice::InvalidFunction,CF::ExecutableDevice::InvalidParameters,CF::ExecutableDevice::InvalidOptions,CF::InvalidFileName,CF::ExecutableDevice::ExecuteFail);

};

/* This interface extends the Device interface by adding software loading
and unloading behavior to a Device.
*/
interface LoadableDevice : Device {

    /* This LoadType defines the type of load to be performed. The load types are in
accordance with the code element withing the softpkg element's implementation
element, which is defined in Appendix D SPD
*/
    enum LoadType {

        KERNEL_MODULE,
        DRIVER,
        SHARED_LIBRARY,
        EXECUTABLE
    };

    /* The InvalidLoadKind exception indicates that the Device is unable to load the type
of file designated by the loadKind parameter.
*/
    exception InvalidLoadKind {
    };

    /* The LoadFail exception indicates that the Load operation failed due to device
dependent reasons. The LoadFail exception indicates that an error occurred during
an attempt to load the device. The error number indicates an ErrorNumberType value
(e.g. CF_EACCES, CF_EAGAIN, CF_EBADF, CF_EINVAL, CF_EMFILE, CF_ENAMETOOLONG,
CF_ENOENT, CF_ENOMEM, CF_ENOSPC, CF_ENOTDIR ). The message is component-dependent,
providing additional information describing the reason for the error.
*/
    exception LoadFail {
        CF::ErrorNumberType errorNumber;
        string msg;
    };
};

```

```
};

/* This operation provides the mechanism for loading software on a specific device.
   The loaded software may be subsequently executed on the Device, if the Device is
   an ExecutableDevice.

   The load operation loads a file on the specified device based upon the input
   loadKind and fileName parameters using the input FileSystem parameter to retrieve
   the file.

   The load operation supports the load types as stated in the Device's software
   profile LoadType allocation properties.

   The load operation keeps track of the number of times a file has been successfully
   loaded.

   This operation does not return any value.

   The load operation raises the InvalidState exception when the Device's adminState
   is not UNLOCKED or operationalState is DISABLED.

   The load operation raises the InvalidLoadKind exception when the input loadKind
   parameter is not supported.

   The load operation raises the CF InvalidFileName exception when the file
   designated by the input filename parameter cannot be found.

   The load operation raises the LoadFail exception when an attempt to load the
   device is unsuccessful.
*/
void load (
    in CF::FileSystem fs,
    in string fileName,
    in CF::LoadableDevice::LoadType loadKind
)
    raises
(CF::Device::InvalidState,CF::LoadableDevice::InvalidLoadKind,CF::InvalidFileName,CF::LoadableDevic
e::LoadFail);

/* This operation provides the mechanism to unload software that is currently loaded.

   The unload operation decrements the load count for the input filename parameter
   by one. The unload operation unloads the application software on the device based
   on the input fileName parameter, when the file's load count equals zero.
```

This operation does not return a value.

The unload operation raises the InvalidState exception when the Device's adminState is LOCKED or its operationalState is DISABLED.

The unload operation raises the CF InvalidFileName exception when the file designated by the input filename parameter cannot be found.

```
*/
void unload (
    in string fileName
)
    raises (CF::Device::InvalidState,CF::InvalidFileName);

};

/* This interface provides the getPort operation for those objects that provide ports. */

interface PortSupplier {
    /* This exception is raised if an undefined port is requested. */

    exception UnknownPort {
    };

    /* The getPort operation provides a mechanism to obtain a specific consumer or producer
    Port. A PortSupplier may contain zero-to-many consumer and producer port
    components.

    The exact number is specified in the component's Software Profile SCD (section
    Error! Reference source not found.). These Ports can be either push or pull types.
    Multiple input and/or output ports provide flexibility for PortSuppliers that must
    manage varying priority levels and categories of incoming and outgoing messages,
    provide multi-threaded message handling, or other special message processing.

    The getPort operations returns the object reference to the named port as stated in
    the component's SCD. The getPort operation returns the CORBA object reference that
    is associated with the input port name.

    The getPort operation raises an UnknownPort exception if the port name is invalid.
    */
    Object getPort (
        in string name
    )
}
```

```
        raises (CF::PortSupplier::UnknownPort);  
  
    };  
  
};  
  
#endif
```


C.2 PortTypes MODULE.

This CORBA Module contains a set of unbundled CORBA sequence types based on CORBA types not in the CF CORBA Module. The Basic Sequence Types IDL was generated from the Rational Rose model, Rose Enterprise Edition Release Version 2003.06.00.436.000.

```
//Source file: PortTypes.idl

#ifndef __PORTTYPES_DEFINED
#define __PORTTYPES_DEFINED

module PortTypes {

    /* This type is a CORBA unbounded sequence of Wstrings. */
    typedef sequence <wstring> WstringSequence;

    /* This type is a CORBA unbounded sequence of booleans. */
    typedef sequence <boolean> BooleanSequence;

    /* This type is a CORBA unbounded sequence of characters. */
    typedef sequence <char> CharSequence;

    /* This type is a CORBA unbounded sequence of doubles. */
    typedef sequence <double> DoubleSequence;

    /* This type is a CORBA unbounded sequence of long Doubles. */
    typedef sequence <long double> LongDoubleSequence;

    /* This type is a CORBA unbounded sequence of longlongs. */
    typedef sequence <long long> LongLongSequence;

    /* This type is a CORBA unbounded sequence of longs. */
    typedef sequence <long> LongSequence;

    /* This type is a CORBA unbounded sequence of shorts. */
    typedef sequence <short> ShortSequence;

    /* This type is a CORBA unbounded sequence of unsigned lon longs. */
    typedef sequence <unsigned long long> UlongLongSequence;

    /* This type is a CORBA unbounded sequence of unsigned longs. */
    typedef sequence <unsigned long> UlongSequence;

    /* This type is a CORBA unbounded sequence of unsigned shorts. */
    typedef sequence <unsigned short> UshortSequence;

    /* This type is a CORBA unbounded sequence of wcharacters. */
    typedef sequence <wchar> WcharSequence;

    /* This type is a CORBA unbounded sequence of floats. */
    typedef sequence <float> FloatSequence;

};

#endif
```


C.3 STANDARDEVENT MODULE.

The StandardEvent module contains the types necessary for a standard event producer to generate standard SCA events as depicted in Figure C-4.

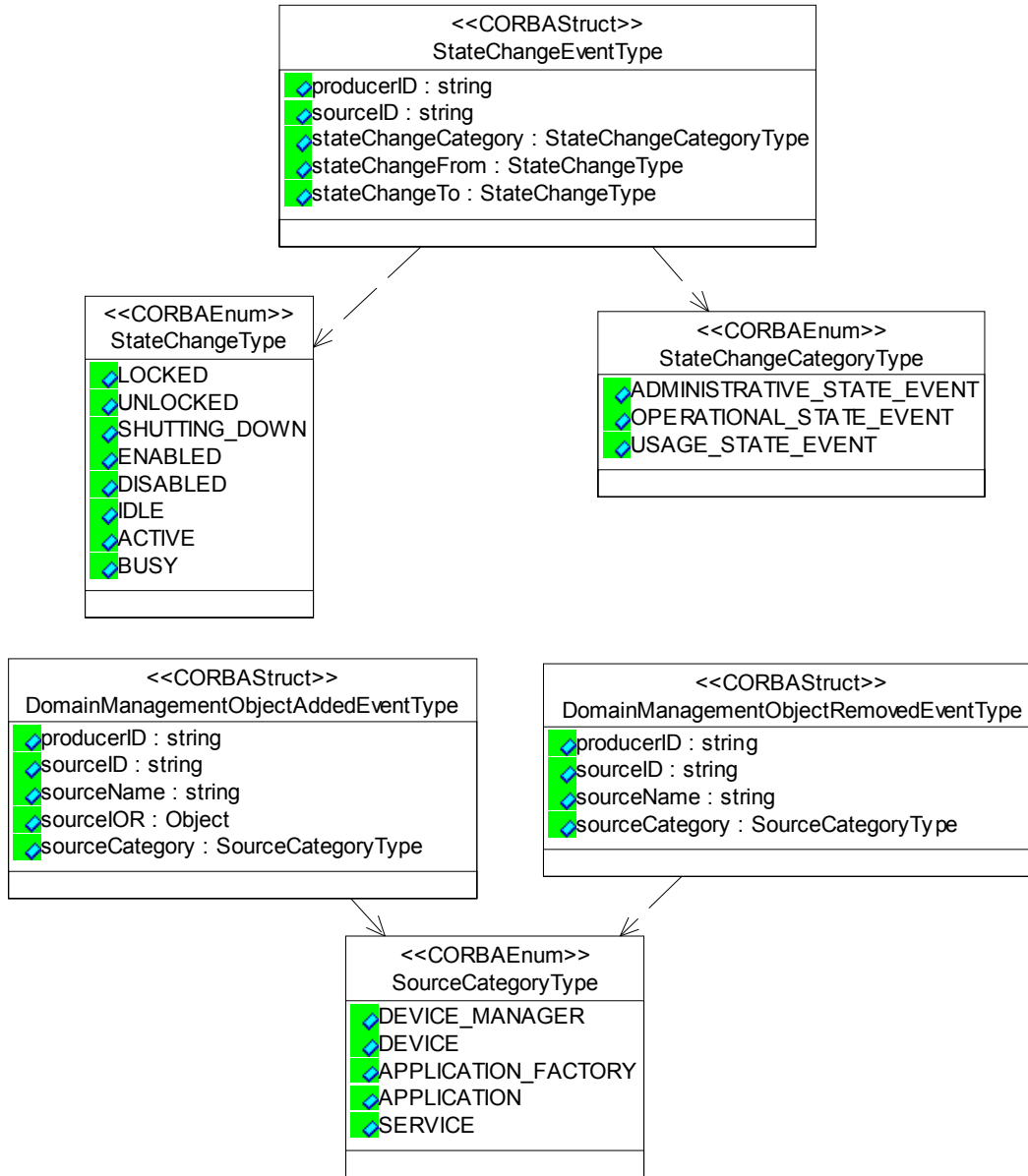


Figure C-4. StandardEvent Module

```
//Source file: StandardEvent.idl

#ifndef __STANDARDEVENT_DEFINED
#define __STANDARDEVENT_DEFINED

module StandardEvent {

    /* Type StateChangeCategoryType is an enumeration that is utilized in the
    StateChangeEventType. It is used to identify the category of state change
    that has occurred. */

    enum StateChangeCategoryType {

        ADMINISTRATIVE_STATE_EVENT,
        OPERATIONAL_STATE_EVENT,
        USAGE_STATE_EVENT
    };

    /* Type StateChangeType is an enumeration that is utilized in the
    StateChangeEventType. It is used to identify the specific states of the
    event source before and after the state change occurred. */

    enum StateChangeType {

        LOCKED,
        UNLOCKED,
        SHUTTING_DOWN,
        ENABLED,
        DISABLED,
        IDLE,
        ACTIVE,
        BUSY
    };

    /* Type StateChangeEventType is a structure used to indicate that the state of the
    event source has changed. The event producer will send this structure into an
    event channel on behalf of the event source. */

    struct StateChangeEventType {
        string producerId;
        string sourceId;
        StandardEvent::StateChangeCategoryType stateChangeCategory;
        StandardEvent::StateChangeType stateChangeFrom;
    };
};
```

```

        StandardEvent::StateChangeType stateChangeTo;
    };

    /* Type SourceCategoryType is an enumeration that is utilized in the
    DomainManagementObjectAddedEventType and
    DomainManagementObjectRemovedEventType. Is is used to
    identify the type of object that has been added to or removed from the domain. */

    enum SourceCategoryType {

        DEVICE_MANAGER,
        DEVICE,
        APPLICATION_FACTORY,
        APPLICATION,
        SERVICE
    };

    /* Type DomainManagementObjectRemovedEventType is a structure used to
    indicate that the event source has been removed from the domain. The event
    producer will send this structure into an event channel on behalf of the event source. */

    struct DomainManagementObjectRemovedEventType {
        string producerId;
        string sourceId;
        string sourceName;
        StandardEvent::SourceCategoryType sourceCategory;
    };

    /* Type DomainManagementObjectAddedEventType is a structure used to indicate
    that the event source has been added to the domain. The event
    producer will send this structure into an event channel on behalf of the event source. */

    struct DomainManagementObjectAddedEventType {
        string producerId;
        string sourceId;
        string sourceName;
        StandardEvent::SourceCategoryType sourceCategory;
        Object sourceIOR;
    };
};

#endif

```